

**SHIP PRODUCTION COMMITTEE
FACILITIES AND ENVIRONMENTAL EFFECTS
SURFACE PREPARATION AND COATINGS
DESIGN/PRODUCTION INTEGRATION
HUMAN RESOURCE INNOVATION
MARINE INDUSTRY STANDARDS
WELDING
INDUSTRIAL ENGINEERING
EDUCATION AND TRAINING**

**May 1999
NSRP 0544**

THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

Environmental Training Modules Module 4 - Shipyard Oil Pollution Prevention and PIC Training

**U.S. DEPARTMENT OF THE NAVY
CARDEROCK DIVISION,
NAVAL SURFACE WARFARE CENTER**

in cooperation with
**National Steel and Shipbuilding Company
San Diego, California**

Report Documentation Page			Form Approved OMB No. 0704-0188	
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>				
1. REPORT DATE MAY 1999	2. REPORT TYPE N/A	3. DATES COVERED -		
4. TITLE AND SUBTITLE The National Shipbuilding Research Program, Environmental Training Modules 4 - Shipyard Oil Pollution Prevention and PIC Training			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Surface Warfare Center CD Code 2230-Design Integration Tower Bldg 192, Room 128 9500 MacArthur Blvd Bethesda, MD 20817-5700			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF: a. REPORT unclassified			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 103
b. ABSTRACT unclassified				
c. THIS PAGE unclassified				

DISCLAIMER

These reports were prepared as an account of government-sponsored work. Neither the United States, nor the United States Navy, nor any person acting on behalf of the United States Navy (A) makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness or usefulness of the information contained in this report/manual, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or (B) assumes any liabilities with respect to the use of or for damages resulting from the use of any information, apparatus, method, or process disclosed in the report. As used in the above, "Persons acting on behalf of the United States Navy" includes any employee, contractor, or subcontractor to the contractor of the United States Navy to the extent that such employee, contractor, or subcontractor to the contractor prepares, handles, or distributes, or provides access to any information pursuant to his employment or contract or subcontract to the contractor with the United States Navy. ANY POSSIBLE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR PURPOSE ARE SPECIFICALLY DISCLAIMED.

TRAINING MODULES OVERVIEW

Executive Summary and User's Guide (NSRP 0540) Gives an overview of the 10 module set of environmental training modules, plus key issues involved in training in general. Instructions are supplied for how the modules can be modified to suit individual shipyards, as well as hardware and software requirements.

Module 1 (NSRP 0541) Good Environmental Practices

Content: Craft/trade-specific training on items that workers must deal with on a regular basis – material handling, labeling, waste generation/minimization, requirements awareness.

Recipients: New employees on arrival, and existing workers as a refresher.

Module 2 (NSRP 0542) Environmental Practices for Specific Craft/Trade Groups

Content: Specific training on air, hazardous materials, waste minimization, and related environmental considerations, with a focus on the generator personnel and their individual practices and procedures. Emphasis on those personnel likely to encounter a high incidence of problems during their regular duties.

Recipients: Specific craft/trade groups of workers.

Module 3 (NSRP 0543) Shipyard Incident Response Training

Content: Detailed presentation of response requirements specified by OSHA. Basic ingredients of a viable program for a shipyard – what is required and how to reach a satisfactory state of readiness. Includes specific duties of all participants, as well as how to ensure coordination and a common focus. This Module will provide the shipyards with an in-house capability for conducting this important training.

Recipients: Environmental Manager, Environmental Staff Personnel, Safety Engineer, Safety Personnel, Fire Department Personnel, Laboratory Staff and Technicians, Emergency Response Coordinator, Medical Personnel.

Module 4 (NSRP 0544) Shipyard Oil Pollution Prevention and PIC Training

Content: Provides a detailed overview on the federal regulatory oil pollution prevention and response requirements. Also contains specific training material for those shipyard employees with designated "Person in Charge" responsibilities.

Recipients: Ship and Craft Managers and Leadmen, Environmental and Safety Department Personnel, designated Persons in Charge.

Module 5 (NSRP 0545) General Environmental Awareness

Content: Overview of environmental statutes and regulations affecting shipyards, including responsibilities for compliance including both civil and criminal penalties for non-compliance. Includes an overview and explanation of environmental processes - how laws are formulated, the role of environmental groups, consultants, advisers.

Recipients: Senior Management

Module 6 (NSRP 0546) Technical Overview of Environmental Statutes and Regulations

Content: A general but in-depth overview of all environmental statutes and regulations with a focus on shipyard interests, and emphasis on the technical aspects of the requirements.

Recipients: Environmental Managers and staff personnel.

Module 7 (NSRP 0547) Environmental Requirements of Concern to Shipyards

Content: General overview of ALL requirements as they apply to shipyards. Emphasis on technical aspects and actions needed for compliance, rather than on the penalties for non-compliance. Includes overall strategy for developing a strong environmental posture.

Recipients: Senior Management, Supervisors, Generator Personnel; all workers who interface with environmental matters.

Module 8 (NSRP 0548) Generation/Treatment/Minimization of Hazardous Waste

Content: Discussion of regulatory requirements and statutes that apply to shipyard hazardous waste activities. Stresses the high points of the laws, and how to satisfy them. Includes overview of training provided to hazardous waste operators.

Recipients: Middle-level Managers

Module 9 (NSRP 0549) Hazardous Waste Operator Training

Content: Detailed training on practices and procedures performed by hazardous waste operators. Includes reclamation techniques, safe handling practices, labeling/marking, inventory control, hazard minimization.

Recipients: Hazardous Waste Operators; helpers and assistants

Module 10 (NSRP 0550) Environmental Training for Subcontractor Personnel

Content: Briefing on environmental requirements and considerations applicable to all Subcontractor Personnel entering a shipyard environment.

Recipients: Subcontractor Personnel; visitors to a shipyard; transient personnel such as delivery agents, auditors, and oversight personnel.

Shipyard Oil Pollution Prevention Requirements

Objective of this Training Session: To provide an introduction and overview of oil pollution prevention requirements affecting shipbuilding and repair facilities.

Introduction: Shipbuilding and/or repair facilities in the United States are subject to a number of statutory and regulatory requirements intended to both prevent the discharge of oil into the environment and ensure an effective response when such discharges occur. Unfortunately, in many instances, the understanding of the scope and application of these oil pollution requirements for shipyards is complex and confusing. This results from the fact that shipyards, due to the nature of their location and operations, can be simultaneously subject to requirements promulgated by the Environmental Protection Agency, Department of Transportation, United States Coast Guard and their own state and local environmental agencies. In some cases, multiple requirements from different regulatory agencies can be simultaneously applicable to the same equipment or process. In other instances, the same equipment or process can be subject to different jurisdictions and/or requirements depending upon where the equipment or process is located in the shipyard at any given time. Given that most equipment and many processes can change locations in the shipyard frequently, the when and how of regulatory applicability can often be difficult to answer. These training sessions are intended to provide the student with a comprehensive understanding of those oil pollution requirements which do or may affect equipment and processes that occur or could occur in the shipyard. From this understanding the applicability of these requirements can be assessed and the appropriate actions taken to ensure compliance.

Background: The impact of oil, in its many forms, on the environment has been of concern for well over one hundred years. Over the last decade, the public's concern has been accentuated by the news of oil spills of massive proportions in environmentally sensitive areas. Oil exploration and recovery has moved into areas such as the coastal zone, where environmental resources, such as fish and birds, can be quickly and seriously damaged if oil is spilled. Finally, oil is transported across the world's oceans and in-land seas in bulk quantities on-board ships of extensive dimensions. Under these circumstances, even small errors of man or machine have the potential to result in significant environmental degradation.

Early in the 1970's, the U.S. Congress reacted to a series of oil tanker accidents by enacting § 311 of the Clean Water Act. This section established the basic framework or system for the clean-up of oil spills. Under this section, a clean-up fund was established and financed by government appropriation.

Internationally, following the 1967 grounding of the *Torrey Canyon* off the coast of England, the International Maritime Organization ("IMO") developed two treaties:

- ◆ The International Convention on Civil Liability for Oil Pollution Damage ("CLC")(1996); and
- ◆ International Convention on the Establishment of an International Fund for Compensation or Oil Pollution Damage ("FC")(1971).

Shipyard Oil Pollution Prevention Requirements

The objective of these treaties was to create a uniform international oil spill liability and compensation system. The United States participated in both conventions, but has never agreed to enact these treaties into law. At the same time, International Convention for the Prevention of Pollution from Ships (“MARPOL”) has paralleled U.S. law in imposing requirements on the operation, design and construction of oil tankers.

The winter of 1976-77 saw ten tanker accidents world-wide resulting in significant discharges, including 7.6 million gallons of oil from the Liberian tanker *Argo Merchant* off the coast of Massachusetts. The U.S. Congress began to devote serious consideration to numerous oil spill pollution bills. Numerous safety amendments were added to the Ports and Waterways Safety Act of 1972. Tanker safety measures were enacted in 1978 as the Port and Tanker Safety Act, which includes vessel manning, construction, equipment and operation requirements. The U.S. Coast Guard was given authority to enforce the new requirements.

In 1980, Congress enacted the Act to Prevent Pollution from Ships, which implemented the 1978 MARPOL Protocol. In 1990 the Oil Pollution Act was enacted, imposing significant new requirements for ship owners, and others involved in the storing, handling and transporting of oil. The Oil Pollution Act of 1990 (“OPA 90”) is still in the process of full development. While numerous issues concerning the regulatory implementation of OPA 90 requirements remain unresolved to date, major and permanent changes have been made to the oil spill and prevention terrain.

Shipyard Oil Pollution Prevention Requirements

Objective of this Training Session: To explain the requirements of the Oil Pollution Act of 1990.

Introduction: The Oil Pollution Act of 1990 (OPA 90) was enacted by Congress in response to a growing public outrage to the environmental damage caused by oil tanker accidents throughout the 1970's and 80's. The grounding of the *Exxon Valdez* in 1989 in the Prince William Sound, Alaska, and its subsequent loss of 11 million gallons of oil provided the final impetus to push this legislation through Congress. This legislation imposed strict liability requirements on the owners and operators of vessels and facilities for oil spills, without regard to fault. In addition to the liability for the cost of clean-up (removal actions), damages for the environmental impact may also be assessed, which could be much more than the removal costs.

OPA 90 also changed the laws controlling aspects of manning and operation of tank vessels. Additionally, new tank vessels are now required to have double hulls. Existing vessels are required to be modified to meet this standard according to a phase-in time schedule.

Extensive new contingency planning requirements were enacted with OPA 90. Both vessels and facilities are required to plan for maximum foreseeable oil spills. Final rules requiring response plans for vessels, marine transportation related, marine non-transportation related and rail road tank cars have been issued.

OPA 90 established a comprehensive oil pollution prevention, liability and response system that is applicable to all types of vessels and facilities involved in the production, storage, transfer and transportation of oil, including shipyards.

Definitions: The understanding of the scope and applicability of the numerous requirements of OPA 90 depends on a clear definition of the key words and phrases contained in the statute. Below are some of the more important words and phrases necessary to determine the applicability of requirements to shipyards.

Vessel - "vessel" means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, other than a public vessel;

Onshore Facility - "onshore facility" means any facility (including, but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under, any land within the United States other than submerged land;

Navigable Waters - "navigable waters" means the waters of the United States, including the territorial sea;

Offshore Facility - "offshore facility" means any facility of any kind located in, on, or under any of the navigable waters of the United States, and any facility of any kind which is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel;

Oil - "oil" means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than

Shipyard Oil Pollution Prevention Requirements

dredged spoil, but does not include petroleum, including crude oil or any fraction thereof, which is specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601) and which is subject to the provisions of that Act (42 U.S.C. 9601 et seq.);

Responsible Parties - "responsible party" means the following:

- (A) **Vessels** - In the case of a vessel, any person owning, operating, or demise chartering the vessel.
- (B) **Onshore facilities** - In the case of an onshore facility (other than a pipeline), any person owning or operating the facility, except a Federal agency, State, municipality, commission, or political subdivision of a State, or any interstate body, that as the owner, transfers possession and right to use the property to another person by lease, assignment, or permit.
- (C) **Offshore facilities** - In the case of an offshore facility (other than a pipeline or a deepwater port licensed under the Deepwater Port Act of 1974 (33 U.S.C. 1501 et seq.), the lessee or permittee of the area in which the facility is located or the holder of a right of use and easement granted under applicable State law or the Outer Continental Shelf Lands Act (43 U.S.C. 1301-1356) for the area in which the facility is located (if the holder is a different person than the lessee or permittee), except a Federal agency, State, municipality, commission, or political subdivision of a State, or any interstate body, that as owner, transfers possession and right to use the property to another person by lease, assignment, or permit.
- (D) **Deepwater ports** - In the case of a deepwater port licensed under the Deepwater Port Act of 1974 (33 U.S.C. 1501-1524), the licensee.
- (E) **Pipelines** - In the case of a pipeline, any person owning or operating the pipeline.
- (F) **Abandonment** - In the case of an abandoned vessel, onshore facility, deepwater port, pipeline, or offshore facility, the persons who would have been responsible parties immediately prior to the abandonment of the vessel or facility.

Tank Vessel - "tank vessel" means a vessel that is constructed or adapted to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue, and that

- (A) is a vessel of the United States;
- (B) operates on the navigable waters; or
- (C) transfers oil or hazardous material in a place subject to the jurisdiction of the United States;

Discharge - "discharge" means any emission (other than natural seepage), intentional or unintentional, and includes, but is not limited to, spilling, leaking, pumping, pouring, emitting, emptying, or dumping;

Facility - "facility" means any structure, group of structures, equipment, or device (other than a vessel) which is used for one or more of the following purposes: exploring for, drilling for, producing, storing, handling, transferring, processing, or transporting oil. This term includes any motor vehicle, rolling stock, or pipeline used for one or more of these purposes;

Remove - "remove" or "removal" means containment and removal of oil or a hazardous substance from water and shorelines or the taking of other actions as may be necessary to minimize or mitigate damage to the public health or welfare,

Shipyard Oil Pollution Prevention Requirements

including, but not limited to, fish, shellfish, wildlife, and public and private property, shorelines, and beaches.

These definitions can be used as a reference when determining the applicability of various OPA 90 derived requirements to shipyards.

Jurisdiction: The issue of clarifying the applicable jurisdiction of the various agencies responsible for implementing the requirements of OPA 90 is important to shipyards. To understand the jurisdictional issue, a shipyard must be understood as a “complex” of activities, equipment and processes that may be subject to the jurisdiction of one or more agencies. “Facilities” are divided into several types, and different agencies have jurisdiction over one or more types of facilities. In the case of complex facilities, two or more agencies will have jurisdiction over different areas, equipment and processes. The different types of facilities and agencies with jurisdiction are provided below.

Facility	Agency
On-shore non-transportation related	Environmental Protection Agency
Off-shore non-transportation related	Mineral Management Services (DOI)
Marine transportation related	United States Coast Guard
Off-shore transportation related	United States Coast Guard
On-shore pipelines and rolling stock	Special Programs and Research (DOT)
Vessels	United States Coast Guard

Shipyards typically contain elements of two and sometime four types of facilities. Various areas, equipment and processes on the shipyard can be classified as “Marine transportation related,” “On-shore non-transportation related,” “On-shore pipelines and rolling stock” and/or “Vessels. Shipyards would not normally be subject to the requirements of “Off-shore non-transportation related” or “Off-shore transportation related” facilities.

Additionally, the requirements for various types of facilities listed above can depend upon whether the shipyard meets the specific applicability criteria for the “type” of facility listed. For example, for the non-transportation related portion of the facility, or complex, the EPA requires a Spill Prevention, Control and Countermeasures (“SPCC”) plan if the facility (shipyard) has a combined aboveground oil storage capacity of at least 1,320 gallons (40 CFR 112.7). If, however, the facility both transfers oil over water to or from vessels, and has a total on-site oil storage capacity greater than or equal to 42,000 gallons, a Facility Response Plan (“FRP”) is required (40 CFR 112.20).

Contingency Planning: For shipyards, most of the significant changes brought about by OPA 90 will lie in the contingency planning requirements. A matrix of the different types of contingency planning requirements for the different types of facilities (or different portions of a facility complex) is provided below.

Shipyard Oil Pollution Prevention Requirements

Contingency Planning Requirement Matrix

Facility or Portion of Complex	Contingency Planning Requirement	Agency	Citation
Non-Transportation Related	Spill Prevention, Control and Countermeasures Plan	EPA	40 CFR 112.7
	Facility Response Plan	EPA	40 CFR 112.20
Marine-Transportation Related	Facility Response Plan	USCG	33 CFR 154
Vessels	Vessel Oil Spill Response Plan	USCG	33 CFR 155 Subpart D
Tank truck or rail car	Oil Spill Response Plan	DOT	49 CFR 130.31
Oil Pipeline	Oil Pipeline Response Plan	DOT	49 CFR 194

The determination of what contingency planning requirements apply to which specific areas or operations of a facility complex is often difficult. The EPA and other involved agencies responsible for determining compliance with the contingency planning requirements also recognized this fact. In response to this potentially confusing situation, the National Response Team, consisting of agencies within the Environmental Protection Agency, Department of Transportation, Department of Labor and Department of Interior developed a model “Integrated Response Plan.” The intent of the NRT was to provide a mechanism for consolidating multiple plans that facilities may have to prepare in order to comply with various regulations into one functional emergency response plan, or integrated contingency plan (“ICP”).

Financial Responsibility: OPA 90 imposed requirements for the owners and operators of vessels and facilities to establish and maintain evidence of financial responsibility sufficient to meet the maximum liability limits for each vessel or facility. Any claim for which liability may be established under OPA 90 may be asserted directly against the person providing evidence of financial responsibility. Financial responsibility may be established by any one, or combination of methods, which in the case of a facility, the EPA deems appropriate. These methods include:

- evidence of insurance;
- surety bond
- guarantee;
- letter of credit;
- qualification as self-insurer; or
- other evidence of financial responsibility.

Containment and Removal: OPA 90 gives federal agencies the responsibility for averting threats of oil spills and conducting containment and removal actions when spills do occur.

Shipyard Oil Pollution Prevention Requirements

While responsibility for cleaning up spills may be charged to the government agencies, the resources to clean-up the spill will primarily come from private resources, acquired or contracted by vessel and facility owners/operators.

The containment and removal provisions of OPA 90 are invoked when a “discharge” or the threat of a discharge, of oil or hazardous substances occurs. It is the responsibility of the owner/operator of the vessel or facility to respond immediately to the incident.

Notification of the discharge is required to be made to the National Response Center in Washington D.C. Notification can also be made to the Coast Guard or the on-scene coordinator designated by the EPA for the area in which the discharge occurs. Failure to notify the proper authorities can result in substantial penalties of up to \$250,000 for an individual, \$500,000 for an organization, as well as five years imprisonment.

National Contingency Plan: The National Contingency Plan (“NCP”) establishes the overall methodology for the containment, dispersal and removal of oil and hazardous substances. The NCP established the National Response Team (“NRT”) as the leader in national emergency response planning and coordination. The NRT consists of representatives for the EPA and U.S. Coast Guard, together with representatives from 13 other federal agencies. In addition to taking the lead in planning, the NRT is designated as the emergency response team when an oil spill exceeds the response capacity of the region in which it occurs, or involves a “substantial threat” to public health or welfare, property or natural resources. The NRT communication center was designated to be the Coast Guard headquarters in Washington D.C.

Contingency planning for oil spills is done by Area Committees consisting of federal, state and local agencies. The committees prepare a detailed Area Contingency Plan (“ACP”) to respond to a worst case oil discharge from a vessel, offshore facility or on-shore facility within the designated area.

Penalties: OPA 90 substantially increased the severity of administrative, civil and criminal penalties that can be imposed on vessel and facility owners/operators of violations of the Clean Water Act, OPA and marine safety laws. Both the Coast Guard and the Environmental Protection Agency can impose penalties for violations occurring at facilities within their jurisdiction. Administrative penalties can be imposed by the EPA and Coast Guard on the basis of their own authority. Civil and criminal penalties are imposed by the court at the request of the agency, through the civil and criminal legal process.

- **Administrative Penalties** - A Class I penalty is up to \$10,000 per violation, not to exceed \$ 25,000, and a Class II penalty is up to \$10,000 per day, not to exceed \$125,000.
- **Civil Penalties** - A civil penalty of up to \$25,000 per day of violation or up to \$1,000 per barrel of oil or unit of reportable quantity of hazardous substance discharged. If the discharge of oil or hazardous substance is the result of gross negligence or willful misconduct of the owner, operator or person in charge of a vessel or facility, that person is subject to a civil penalty of at least \$100,000 and not more than \$3,000 per barrel of oil or unit of reportable quantity or hazardous substance discharged.

Shipyard Oil Pollution Prevention Requirements

- Criminal Penalties - A person who negligently discharges oil or a hazardous substance in a quantity determined to be harmful to the public health or welfare of the United States is subject to a criminal fine of \$2,500 to \$25,000 per day of violation, as well as one year imprisonment for the first conviction. In the event of a second conviction, the fine is up to \$50,000 per day of violation and the prison term is two years.

A knowing discharge of oil or hazardous substance can result in a criminal fine of \$5,000 to \$50,000 per day of violation and three year imprisonment for the first conviction. For a second conviction, the fine is \$100,000 per day of violation and the prison term is six years.

- A person who knowingly discharges oil or a hazardous substance and who knows at the time that he places another person in imminent danger of death or serious bodily injury is liable for a criminal fine of up to \$250,000 and 15 years in prison. If the “person” is an organization, the fine is \$1,000,000.

Shipyard Oil Pollution Prevention Requirements

Objective of this Training Session: To understand the Oil Pollution Regulatory Scheme affecting shipyard operations.

Introduction: Shipyards may be subject to the requirements of several agencies with regard to oil pollution depending on the types of facility complex(s) which exist within the shipyard. These include the U.S. Coast Guard requirements for Marine Transportation Related Facilities, Mobile Facilities and Vessels, EPA requirements for Non-transportation Related Facilities, and DOT Requirements for Tanker Trucks and Rail Cars. A comprehensive understanding of these requirements will assist the various individuals in the shipyard who are charged with compliance or operations responsibilities to meet applicable provisions in an effective and cost-efficient manner, and are discussed below.

United States Coast Guard: Coast Guard requirements are applicable to both marine transportation related onshore facilities, as well as vessels. The requirements for vessels would be applicable to a shipyard if the facility owns or operates a vessel subject to the relevant criteria, such as a barge or heavy lift. If a vessel is operating within the shipyard and is owned and operated by another party, the Coast Guard requirements apply to the owner/operator, rather than the shipyard.

Marine Transportation Related Facilities - 33 CFR 154 contains the requirements that apply to marine transportation related facilities that are capable of transferring oil or hazardous substances in bulk to or from fixed, or mobile, onshore facilities to or from a vessel that has a total capacity of 250 barrels (10,500 gallons) or more for all bulk products carried.

Specific requirements imposed by the Coast Guard include the development and approval of an Operations Manual, oil/hazardous substance transfer equipment requirements, facility operation requirements, vapor control requirements (when applicable), and a facility response plan (also when applicable).

Operations Manual - The Operations Manual provides information concerning the facility, the facility's capacity to make transfers of oil and/or hazardous substances, types of materials transferred, hazards of the materials transferred, instructions for safe handling of the materials, and procedures to be followed if the material spills or leaks.

Specifically, the Operations Manual must contain:

- * The geographic location of the facility;
- * Physical description of the facility;
- * Hours of operation of the facility;
- * Size, types, and number of vessels that the facility can transfer oil or hazardous substance to or from simultaneously;
- * Information such as the identification and physical/chemical properties of materials transferred;
- * The minimum number of persons on duty and their duties during transfer operations;

Shipyard Oil Pollution Prevention Requirements

- * Name and telephone numbers of personnel to call during an emergency;
- * The duties of watchmen for unmanned vessels at the facility;
- * A description of required communication systems;
- * The location and facilities of each personnel shelter, if any;
- * A description and instruction for use of drip and discharge collection and vessel slop reception facilities, if any;
- * A description and the location of each emergency shutdown system;
- * Quantity, type, location and instruction for use of monitoring devices, if required;
- * Quantity, type, location, instruction for use, and time limits for gaining access to containment equipment;
- * Quantity, type, location and instruction for use of fire extinguishing equipment;
- * Maximum relief value settings for each transfer system;
- * Procedures for operating loading arms, transferring oil or hazardous substances, completion of pumping and emergencies;
- * Procedures for reporting and initial containment of oil or hazardous material releases;
- * A brief summary of applicable Federal, State and local oil or hazardous material pollution laws and regulations;
- * A description of the training and qualification program for persons in charge of transfer operations;
- * Statements explaining that each hazardous material transfer hose is marked with either the name of the product or symbols representing all such products which may be transferred through the hose; and
- * A description of the vapor collection system if a system is used for recovery, destruction or dispersion of vapors from vessel cargo tanks.

The Operations Manual must be written in the specific order provided for in the regulations or contain a cross-referenced index page in that order.

The Operations Manual must be submitted to the Captain of the Port (“COTP”) for review and approval prior to being used to conduct transfer operations. The COPT will certify that the proposed Operations Manual meets the requirements of 33 CFR 154 by issuing a Letter of Adequacy to the facility. No person may use an Operations Manual for transfer operations unless the facility operator has a valid Letter of Adequacy. The Letter of Adequacy is voided if the Operations Manual is amended without following required procedures or is not amended when required by the COTP.

Equipment Requirements - Equipment used to transfer oil and/or hazardous substances must meet minimum requirements. These requirements include:

Shipyard Oil Pollution Prevention Requirements

- * Hoses. The minimum design burst pressure for each hose assembly must be at least 600 psi and at least four times the sum of pressure of the relief valve setting plus the static head pressure of the transfer system at the point where the hose is installed. The maximum allowable working pressure for each hose assembly must be at least 150 psi and more than the sum of the pressure relief value setting plus the static head pressure of the transfer system at the point where the hose is installed. Each hose assembly must have fully threaded connections and flanges that meet American National Standards¹, or quick-disconnect couplings that meet ASTM F-1122.

Each hose must be marked with the name of each product for which the hose may be used. Alternatively, the hose may be marked "OIL SERVICE" for oil products, or for hazardous materials, the words "HAZMAT SERVICE - SEE LIST" followed immediately by a letter, number or other symbol that corresponds to a list or chart contained in the Operations Manual which identifies the products that may be transferred through a hose bearing that symbol.

Each hose must also be marked with the maximum allowable working pressure, date of manufacture and date of the last pressure test. The hose burst pressure and the pressure used to test the hose must never be marked on the hose.

Each hose used to transfer fuel to a vessel that has a fill pipe for which containment cannot practically be provided must be equipped with a automatic back pressure shutoff nozzle.

- * Loading Arms - Mechanical loading arms used for transferring oil or hazardous substances placed in service after June 30, 1973 must meet the design, fabrication, material, inspection and testing requirements in ANSI B31.3. The manufacturer's certification that the loading arm meets ANSO B31.3 must be permanently marked on the loading arm or recorded elsewhere at the facility. Each mechanical loading arm used for transferring oil or hazardous substance must have the means of being drained or closed before being disconnected after transfer operations are complete.
- * Closure devices - The facility must have enough butterfly valves, wafer-type resilient seated valves, blank flanges or other closure devices to blank off the end of each hose or loading arm that is not connected for the transfer of oil or hazardous material.
- * Monitoring devices - The installation of monitoring devices may be required by the COTP if the installation of the devices would significantly limit the size of a discharge of oil or hazardous materials.
- * Small discharge containment - The facility must have fixed catchments, curbing or other fixed means to contain oil or hazardous materials in hose handling and loading arm areas. The volume of the containment required varies from two to four barrels, depending on the diameter of the hose or pipe and number of hoses used in the area. If fixed containment is not feasible, the facility may use probate

¹ B16.5, Steel Pipe Flanges and Flang Fittings or B16.24, Brass or Bronze Flanges

Shipyard Oil Pollution Prevention Requirements

containment of not less than ½ barrel. A mobile facility may have portable containment of not less than five gallons.

- * Discharge removal - The facility must have a means to safely and quickly remove discharges of oil and/or hazardous materials from the containment areas without discharging the material into the water.
- * Discharge containment equipment - Each facility must have ready access to enough containment material and equipment to contain any oil or hazardous material discharged into the water. Additionally, each facility must establish time limits for deployment of the containment material and equipment considering material handling rates, material capacity susceptible to being spilled, frequency of facility operations, facility age and configuration, and past record of discharges. The COTP may require a facility to surround each vessel conducting an oil or hazardous material transfer operation with containment material prior to commencing operations.
- * Emergency shutdown - The facility must have emergency means to enable the person in charge of the transfer on board the vessel, at that person's usual operating station, to stop the flow of oil or hazardous material from the facility to the vessel. The emergency means must be either an electric, pneumatic or mechanical linkage to the facility, or an electronic voice communications system continuously operated by a person on the facility who can stop the flow of oil or hazardous material immediately.

The point in the transfer system at which the emergency means stop the flow must be located near the dock manifold connection to minimize the loss of material in the event of the rupture or failure of the hose, loading arm or manifold valve. For oil transfers, the emergency means must stop the flow within either 60 seconds (for a facility that first transferred oil on or before November 1, 1980) or 30 seconds (for a facility that first transferred oil after November 1, 1980). For hazardous materials transfers, the emergency means must stop the flow within either 60 seconds (for a facility that first transferred hazardous materials on or before October 4, 1990) or 30 seconds (for a facility that first transferred hazardous materials after October 4, 1990).

- * Communications - Each facility must have the means to enable continuous two-way voice communication between the person in charge of the vessel transfer operations and the person in charge of the facility transfer operations. The means of communication must be usable and effective in all phases of the transfer operations and all conditions of weather at the facility. Portable radio devices used to comply with this requirement must be intrinsically safe.
- * Lighting - For transfer operations occurring between sunset and sunrise, the facility must have fixed lighting that adequately illuminates each transfer connection point in the following locations:
 1. each transfer connection point in the facility;

Shipyard Oil Pollution Prevention Requirements

2. each transfer connection point in use on any barge moored at the facility to or from which oil or hazardous materials are being transferred;
3. each transfer operations work area on the facility; and
4. each transfer operations work area on any barge moored at the facility to or from which oil or hazardous materials are being transferred.

The COTP may require verification by instrumentation that illumination is at least 5.0 foot candles at transfer connection points and 1.0 foot candles in transfer operations work areas.

Facility Operations - The Coast Guard requires that facility operations be in conformance with certain minimum requirements, including:

- * Persons in charge: Designation and Qualification- No person may serve nor may the facility utilize the services of a person as “person in charge” unless that person has been designated by the facility operator, has had at least 48 hours of experience in transfer operations, and has enough experience at the facility to enable the facility operator to determine that his experience is adequate and that he can operate the transfer equipment at the facility.
- * Persons in charge: Evidence of designation - Each person in charge must carry evidence of his designation as a “person in charge” when engaged in transfer operations.
- * Safety requirements - The Coast Guard has numerous requirements to ensure the safety of the facility during transfer operations. These requirements are mostly concerned with fire prevention and suppression activities and equipment.
- * Records - Each facility must keep certain records at the facility and make them available for examination by the COTP. These records include:
 1. a copy of the letter of intent for the facility;
 2. the name of each person in charge as designated at the facility;
 3. date and result of the most recent equipment test;
 4. hose information;
 5. record of examination of the facility by the COTP within the last three years;
 6. the Declaration of Inspection;
 7. a record of repairs made to the vapor recovery system, if any;
 8. a record of all automatic shutdowns of the facilities vapor control system within the last three years, if any; and
 9. plans, calculations and specifications of the facility’s vapor control system.
- * Compliance with the operations manual - The facility operator must require facility personnel to use the procedures in the operations manual for transfer operations.

Shipyard Oil Pollution Prevention Requirements

Response Plans: Response plans are required for all marine transportation related (“MTR”) facilities that could reasonably be expected to cause substantial harm, or significant and substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shoreline. The Coast Guard defines as “reasonable to cause substantial harm” as any fixed or mobile onshore MTR facility capable of transferring oil to or from a vessel with a capacity of 250 barrels (10,500 gallons), and/or any MTR specifically designated by the COTP as a substantial harm facility. A facility is defined as “reasonable to cause significant and substantial harm” when it is a fixed MRT facility capable to transferring oil to or from a vessel with a capacity of 250 barrels (10,500 gallons). You should note that the applicability for fixed MRT facilities is the same for both “substantial harm” and “significant and substantial harm.” The only difference in the two terms are that mobile MRT facilities are not included in the definition of “significant and substantial harm.”

A matrix that illustrates the specific requirements for both substantial harm and significant and substantial harm facilities is provided on the following page. You will notice that the only difference in the requirements between substantial harm and significant and substantial harm facilities in terms of response planning requirements are sections 154.1035 and 154.1040. All other requirements are the same (except for section 154.1041 which only applies to mobile MRTs that are also substantial harm facilities).

A summary of the elements of a facility response plan are provided below.

- * Qualified individual and alternate qualified individual - The response plan must identify individuals and at least one alternate that meet several basic requirements.
- * Methods of ensuring the availability of response resources by contract or other approved means - The response plan must identify how the required resources necessary to response to an oil discharge will be ensured.
- * Worst case discharge - The response plan must use the appropriate criteria to determine the volume of a worst case discharge.
- * General Response Plan Contents - The response plan must be prepared in English in a number of specific sections. Additionally the response plan must be consistent with the National Response Plan.
- * Specific Requirements for facilities that could reasonably be expected to cause significant and substantial harm to the environment - The basic response plan elements are contained in this section, including the introduction, emergency response action plan, hazard evaluation, discussion of spill scenarios, training and drills, plan review and update procedures, facility-specific information and appendixes.
- * Specific requirements for facilities that could reasonably be expected to cause substantial harm to the environment - This section requires the same things as the section for significant and substantial harm facilities with lessening of some specific requirements due to the presumed reduction of risk from a substantial harm MRT.

Shipyard Oil Pollution Prevention Requirements

- * Specific response information to be maintained on mobile MTR facilities - Specific requirements for mobile substantial harm facilities are described, related to maintaining required information at the mobile facility.
- * Response plan development and evaluation criteria for facilities that handle, store, or transport Group I through Group IV oils - The response plan must contain specific information concerning response equipment and procedures used to clean up discharges of Group I to IV oils (types of oils which will float on the surface of water when spilled).
- * Response plan development and evaluation criteria for facilities that handle, store, or transport Group V oils - The response plan must contain specific information concerning response equipment and procedures used to clean up discharges of Group V oil (a type of oil which will sink below the surface of the water when spilled).
- * Response plan development and evaluation criteria for facilities that handle, store, or transport non-petroleum oils - Response planning requirements for non-petroleum oils are contained in this section.
- * Training - A facility operator must provide training to each individual with responsibilities under the response plan. Additionally, the plan must identify the method of training any volunteers or casual laborers employed during a response to comply with 29 CFR 1910.120. The facility operator must also ensure that an oil spill removal organization identified in the response plan maintain records sufficient to document training for the organization personnel. All private response personnel must be trained to meet OHSA standard for emergency response operations in 29 CFR 1910.120.
- * Drills - The response plan must contain detailed information on the type and frequency of oil spill drills to be conducted at the facility. Required drills include facility personnel and qualified individual notification drills conducted monthly, facility equipment deployment drills conducted semi-annually, and spill management tabletop drills conducted yearly. An unannounced drill, in which the oil spill removal organization is activated and the facility's major response equipment is deployed, must be conducted annually. A facility must also participate to the extent requested in any unannounced drills conducted by the area's COTP. The facility must conduct a drill that exercises the entire plan at least once every three years.
- * Inspection and maintenance of response records - Materials and equipment to be used to respond to an oil spill must be inspected and maintained, in accordance with the manufacturer's recommendation and best commercial practices. All inspections and maintenance must be documented and these records maintained on site for a period of at least three years.
- * Submission and approval procedures - A facility's response plan must be submitted to the COTP for initial review and, if appropriate, approval.

Shipyard Oil Pollution Prevention Requirements

- * Plan revision and amendment procedures - The facility must review its response plan annually and incorporate any changes in the listings of economically important or environmentally sensitive areas identified in the Area Contingency Plan in effect six months prior to the plan review. The plan review must occur within one month of the anniversary date of the COPT approval of the plan. Amendments must be sent to the COTP for information or approval. If no amendments are made, the facility must provide a letter to the COTP indicating the fact that the plan remains valid with no changes.

Vessels - 33 CFR 155 contains the oil and hazardous materials pollution prevention requirements for vessels. All or part of this section could be applicable to a shipyard if the shipyard is also the owner or operator of the vessel subject to the requirements. Types of vessels which could be subject to the requirements that are also commonly owned or operated by shipyards include floating drydocks, barges used for holding tank slops, fuel barges and utility or support vessels.

The Coast Guard requirements mainly apply to tank vessels² such as tankships³ and tank barges⁴. However, a number of requirements also apply to vessels with a capacity of 250 or more barrels of oil, such as fuel or cargo. As most shipyards neither own nor operate tankships or tank barges (with the possible exception of fuel barges), most requirements applicable to shipyards that own or operate vessels will fall into this later category.

The noticeable exception to the Coast Guard's vessel requirements are public vessels, such as warships, naval auxiliary or other ships owned or operated by a county when engaged in non-commercial service.

A summary of the requirements of the Coast Guard for vessels (owned or operated by shipyards) is provided below.

Vessel equipment - Subject vessels are required to have equipment in place to both prevent the discharge of oil into the water and assist in the immediate removal of oil when it is spilled.

- * Discharge removal equipment for vessels 400 feet or greater in length; oil tankers and offshore tank barges⁵ with overall length of 400 feet or greater must carry appropriate equipment and supplies for the containment and removal of an on-deck oil cargo spills of at least 12 barrels. The equipment and supplies must include:
 - (1) Sorbents;
 - (2) Non-sparking hand scoops, shovels, and buckets;
 - (3) Containers suitable for holding recovered waste;

² Tank vessel means any vessel that carries oil or hazardous materials in bulk as cargo or in residue.

³ Tankship means any tank vessel constructed or adapted primarily to carry oil or hazardous material in bulk as cargo or cargo residue and propelled by power or sail.

⁴ Tank barge means any tank vessel not equipped with a means of self-propulsion.

⁵ Off shore tank barge means a tank barge carrying oil in bulk as cargo, including dual-mode integrated tug barges certified by the Coast Guard under 46 CFR chapter I, subchapter D, for navigation in waters outside the Boundary Lines, as defined in 46 CFR part 7, in any ocean or the Gulf of Mexico; any tank barge in Great Lakes service; or any foreign flag tank barge.

Shipyard Oil Pollution Prevention Requirements

- (4) Emulsifiers for deck cleaning;
- (5) Protective clothing;
- (6) A minimum of one non-sparking portable pump with hoses; and
- (7) Scupper plugs.

During cargo transfer operations, the equipment and supplies must remain ready for immediate use.

- * Discharge removal equipment for vessels less than 400 feet in length - Oil tankers and offshore oil barges with an overall length of less than 400 feet must carry appropriate equipment and supplies for the containment and removal of on-deck oil spills of at least 7 barrels. The equipment and supplies must include:
 - (1) Sorbents;
 - (2) Non-sparking hand scoops, shovels, and buckets;
 - (3) Containers suitable for holding recovered waste;
 - (4) Emulsifiers for deck cleaning;
 - (5) Protective clothing;
 - (6) A minimum of one non-sparking portable pump with hoses; and
 - (7) Scupper plugs.

During cargo transfer operations, the equipment and supplies must remain ready for immediate use.

- * Discharge removal equipment for inland oil barges⁶ - During cargo transfer operations, inland oil barges must have appropriate equipment and supplies ready for immediate use to control and remove on-deck oil cargo spills of at least one barrel.

The equipment and supplies must include:

- (1) Sorbents;
- (2) Non-sparking hand scoops, shovels, and buckets;
- (3) Containers suitable for holding recovered waste;
- (4) Emulsifiers for deck cleaning; and
- (5) Protective clothing.

The oil barge owner or operator may rely on equipment available at the transfer facility receiving from or discharging to the barge, provided the barge owner or

⁶ Inland oil barge means a tank barge carrying oil in bulk as cargo certificated by the Coast Guard under 46 CFR chapter I, subchapter D for river or canal service or lakes, bays, and sounds service.

Shipyard Oil Pollution Prevention Requirements

operator has prearranged for the use of the equipment by contract or other means approved by the Coast Guard.

- * Discharge removal equipment for vessels carrying oil as secondary cargo - Vessels carrying oil as secondary cargo must carry appropriate equipment and supplies for the containment and removal of on-deck oil cargo spills of at least one-half barrel. The equipment and supplies must include:
 - (1) Sorbents;
 - (2) Non-sparking hand scoops, shovels, and buckets;
 - (3) Containers suitable for holding recovered waste;
 - (4) Emulsifiers for deck cleaning; and
 - (5) Protective clothing

The equipment and supplies must be ready for immediate use during cargo transfer operations.

- * Internal cargo transfer capability - Oil tankers and offshore oil barges must carry suitable hoses and reducers for internal transfer of cargo to tanks or other spaces within the cargo block, unless the vessel's installed cargo piping system is capable of performing this function.
- * Emergency towing capability for oil barges - Offshore oil barges must carry an emergency tow wire or tow line rigged and ready for use. The emergency tow wire or tow line must have the same towing characteristics as the primary tow wire or tow line.
- * Damage stability information for oil tankers and offshore oil barges - Oil tankers and offshore oil barges must have prearranged and prompt access to computerized, shore-based damage stability and residual structural strength calculation programs, which meet the Coast Guard's requirements.
- * Damage stability information for inland oil barges - Inland oil barges must have the vessel plans necessary to perform salvage, stability, and residual hull strength assessments maintained at a shore-based location. Access to the plans must be available 24 hours a day.
- * Containment of oil and hazardous material cargo discharges - Offshore tank barges, with a cargo capacity of 250 or more barrels, that are carrying hazardous material as cargo, or inland tank barges with the capacity of 250 or more barrels that are carrying oil or a hazardous material as cargo, must have under or around each loading manifold and each transfer connection point, a fixed container or enclosed deck area that, in all conditions of ship list or trim encountered, during the loading operation, will contain spilled material. The volume required in the containment area ranges from $\frac{1}{2}$ to 4 barrels and is determined according to the number and diameter of hoses and/or pipes on the manifold or transfer point.

Shipyard Oil Pollution Prevention Requirements

All oil tankers and offshore oil barges with a cargo capacity of 250 or more barrels must have peripheral coamings, including port and starboard coamings and forward and aft athwartships coamings, completely enclosing the cargo deck area, cargo hatches, manifolds, transfer connections, and any other openings where cargo may overflow or leak. The dimensions and location of the coamings are proscribed in the regulations by the Coast Guard.

- * Fuel oil and bulk lubricating oil discharge containment - A ship of 300 gross tons or more must have a fixed container or enclosed deck area under or around each fuel oil or bulk lubricating oil tank vent, overflow, and fill pipe.
 - * Bilge slops/fuel oil tank ballast water discharges on U.S. non-oceangoing ships - No person may operate a U.S. non-oceangoing ship in the navigable waters of the United States, unless it has the capacity to retain on board all oily mixtures and is equipped to discharge these oily mixtures to a reception facility. A U.S. non-oceangoing ship may retain all oily mixtures on board in the ship's bilges. An oily residue (sludge) tank is not required.
 - * Bilge slops/fuel oil tank ballast water discharges on oceangoing ships of less than 400 gross tons - No person may operate an oceangoing ship of less than 400 gross tons, unless it either:
 - (1) Has the capacity to retain on board all oily mixtures and is equipped to discharge these oily mixtures to a reception facility; or
 - (2) Has approved oily water separating equipment for the processing of oily bilge slops or oily fuel oil tank ballast and discharges into the sea.
- An oceangoing ship of less than 400 gross tons may retain all oily mixtures on board in the ship's bilges. An oily residue (sludge) tank is not required. This section does not apply to a barge that is not equipped with an installed bilge pumping system for discharge into the sea.
- * Pumping, piping and discharge requirements for non-oceangoing ships of 100 gross tons and above - No person may operate a non-oceangoing ship of 100 gross tons and above that is fitted with main or auxiliary machinery spaces in the navigable waters of the United States unless:
 - (1) The ship has at least one pump installed to discharge oily mixtures through a fixed piping system to a reception facility;
 - (2) The piping system has at least one outlet that is accessible from the weather deck;
 - (3) Each outlet has a shore connection that meets the Coast Guard Requirements or the ship has at least one portable adapter that meets the Coast Guard Requirements and fits the required outlets; and
 - (4) The ship has a stop valve for each outlet.

These requirements do not apply to a ship that has approved oily-water separating equipment for the processing of oily bilge slops or oily fuel oil tank ballast.

Shipyard Oil Pollution Prevention Requirements

- * Placard - A ship, except a ship of less than 26 feet in length, must have a placard of at least 5 by 8 inches, made of durable material fixed in a conspicuous place in each machinery space, or at the bilge and ballast pump control station, stating the following:

Discharge of Oil Prohibited

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States, or the waters of the contiguous zone, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States, if such discharge causes a film or discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial civil penalties and/or criminal sanctions including fines and imprisonment.

Transfer Personnel, Procedures, Equipment, and Records - These requirements are applicable to the owner and/operators of vessels subject to these requirements. All or parts of this section may be applicable to a shipyard if the shipyard is also the owner or operator of the vessel subject to the requirements. Types of vessels which could be subject to the requirements that are also commonly owned or operated by shipyards include floating drydocks, barges used for holding tank slops, fuel barges and utility or support vessels. The requirements are summarized below:

- * Designation of person in charge - each vessel with a capacity for 250 or more barrels of fuel oil, cargo oil, or hazardous material shall designate, either by name or by position in the crew, the person in charge (PIC) or PICs of each transfer to or from the vessel and of each tank-cleaning.
- * Qualifications of person in charge - The required qualifications of persons in charge vary somewhat depending on the type and flag of the vessel. Subject vessels include tankships, tank barges, foreign tankships, and foreign tank barges, and vessels carrying oil or hazardous material in bulk other than a tank vessel. Required qualifications include sufficient training and experience to conduct the transfer, knowledge of the material being transferred, and procedures for reporting pollution incidents. In the case of a tankship and tank barge, the person in charge must have a "Tankerman"-PIC or "Tankerman - PIC (Barge)" endorsement issued under 46 CFR part 13. A person with a marine chemist certification issued by the National Fire Protection Association may act as the person in charge during transfer of cargo tank cleaning waste on a tank barge located at a tank-cleaning facility or shipyard, without a Tankerman - PIC (Barge) endorsement.
- * Transfer procedures - The operator of a vessel with a capacity of 250 or more barrels of oil or hazardous material must provide transfer procedures that meet the Coast Guard requirements for transferring oil or hazardous material to or from the vessel, and from tank to tank within the vessel.

Shipyard Oil Pollution Prevention Requirements

- * Compliance with transfer procedures - The vessel operator of each vessel required to have transfer procedures in place must maintain current procedures and shall require all vessel personnel to use the transfer procedures for each transfer operation.
- * Availability of transfer procedures - The transfer procedures must be available for inspection by the COTP or OCMI whenever the vessel is in operation, legibly printed in a language or languages understood by personnel engaged in transfer operations, and permanently posted or available at a place where the procedures can be easily seen and used by members of the crew when engaged in transfer operations.
- * Contents of transfer procedures - Transfer procedures must contain information on:
 1. each product transferred to or from the vessel;
 2. a line diagram of the vessels transfer system;
 3. the number of persons required to be on duty during transfer operations;
 4. the duties by title of each officer, person in charge, tankerman, deckhand and other persons required for each transfer;
 5. procedures and duty assignments for tending the vessels mooring during transfer operations;
 6. procedures for operating the emergency shutdown and communications systems;
 7. procedures for topping off tanks;
 8. procedures for ensuring that all valves used during the transfer operations are closed upon completion of transfer;
 9. procedures for reporting discharges of oil or hazardous material into the water;
 10. procedures for closing and opening the vessel opening;
 11. information concerning how each hose is marked to identify the hazardous material which may be transferred through the hose;
 12. information concerning the vapor control system in use during transfer operations, if any; and
 13. a description of the overfill device, if any.
- * Draining into bilges - No person may intentionally drain oil or hazardous material from any source into the bilge of a vessel.
- * Maximum cargo level of oil - A cargo tank on a tank vessel may not be filled with oil higher than 98.5 percent of the cargo tank volume, or the level at which the overfill alarm is set.

Shipyard Oil Pollution Prevention Requirements

- * Emergency shutdown - A tank vessel with a capacity of 250 or more barrels that is carrying oil or hazardous material as cargo must have on board an emergency means to enable the person in charge of a transfer operation to a facility, to another vessel, or within the vessel, to stop the flow of oil or hazardous material. The means to stop the flow must be operable from the cargo deck, cargo control room, or the usual operating station of the person in charge of the transfer operation.
- * Communications - During vessel to vessel transfers, each tank vessel with a capacity of 250 or more barrels of cargo which is carrying oil or hazardous material must have a means that enables continuous two-way voice communication between the persons in charge of the transfer operations on both vessels. Portable radio devices used to comply with this requirement during the transfer of flammable or combustible liquids must be intrinsically safe.
- * Deck lighting - A self-propelled vessel with a capacity of 250 or more barrels of oil or hazardous material which conducts transfer operations between sunset and sunrise must have deck lighting that adequately illuminates each transfer operations work area and each transfer connection point in use on the vessel, as well as each transfer operations work area and each transfer connection point in use on each barge, if any, moored to the vessel to or from which oil or hazardous material is being transferred.
- * Transfer hose - Hose used to transfer oil or hazardous material must meet Coast Guard requirements.
- * Closure devices - Each end of each transfer hose on board which is not connected for the transfer of oil or hazardous material must be blanked off with butterfly valves, wafer-type resilient seated valves, blank flanges, or other means.
- * Tank vessel security - The vessel operator of each tank vessel that contains more oil than the normal clingage, and unpumpable bilge or sump residues in any cargo tank, shall maintain surveillance of that vessel by using a person who is responsible for the security of the vessel and for keeping unauthorized persons off the vessel.
- * Tank vessel integrity - A tank vessel underway or at anchor must have all closure mechanisms on the following openings properly closed:
 - (1) Expansion trunk hatches;
 - (2) Ullage openings;
 - (3) Sounding ports;
 - (4) Tank cleaning openings; and
 - (5) Any other tank vessel openings that maintain the seaworthy condition of the tank vessel and prevent the inadvertent release of oil or hazardous material in the event of a tank vessel accident.

Shipyard Oil Pollution Prevention Requirements

No person may open any of the closure mechanisms while the tank vessel is underway or at anchor except when authorized and supervised by a licensed officer or the tankerman.

- * Records - The vessel operator shall keep a written record available for inspection by the COTP or OCMI of the name of each person currently designated as a person in charge of transfer operations, the date and result of the most recent test, and inspection of each item tested or inspected as required, the hose information required unless that information is marked on the hose, and The Declaration of Inspection.

Vessel Response Plan - The Coast Guard requires oil spill response plans for certain types of vessels. These requirements apply to vessels that are constructed or adapted to carry, or that carry, oil in bulk as cargo⁷ or cargo residue and that is also a vessel of the United States, operates on the navigable waters of the United States and transfers oil in a port or place subject to the jurisdiction of the United States. These requirements do not apply to public vessels, such as warships.

The types of vessels subject to the requirement of a vessel response plan are:

1. Manned vessels carrying oil as a primary cargo⁸,
2. Unmanned tank barges carrying oil as a primary cargo, and
3. Vessels carrying oil as a secondary cargo⁹.

A shipyard must own and/or operate one of these types of vessels to be subject to the vessel response plan requirements it. For most shipyards this would be a tanker barge used to transfer fuel or tank cleaning wastes from vessels. As the potential application of the vessel response plan requirements for shipyards is mostly restricted to tank barges, the following summary of requirements will not address the other types of subject vessels. Information on the requirements for other types of vessel can found in the Coast Guard regulations.

⁷ *Cargo* means oil that is transported to and off-loaded at a destination by a vessel. It does not include:

(1) Oil carried in integral tanks, marine portable tanks, or independent tanks for use by machinery, helicopters, and boats carried aboard the vessel, or for use by helicopters that are directly supporting the vessel's primary operations; or
(2) Oil transferred between a towing vessel and a vessel in its tow to operate installed machinery.

⁸ *Vessels carrying oil as a primary cargo* means all vessels except dedicated response vessels carrying oil in bulk as cargo or cargo residue that have a Certificate of Inspection issued under 46 CFR subchapter D, Certification of Compliance, or Tank Vessel Examination Letter.

⁹ *Vessels carrying oil as a secondary cargo* means vessels, other than vessels carrying oil as a primary cargo, carrying oil in bulk as cargo or cargo residue pursuant to a permit issued under 46 CFR subchapter D (30.01-5), 46 CFR subchapter H (70.50-30), or 46 CFR subchapter I (90.05-35), an International Oil Pollution Prevention (IOPP) or Noxious Liquid Substance (NLS) certificate required by 33 CFR 151.33 or 151.35; a dedicated response vessel carrying oil as cargo outside a response area; or any uninspected vessel that carries oil in bulk as cargo or cargo residue.

Shipyard Oil Pollution Prevention Requirements

- * Qualified individual and alternate qualified individual - The response plan must identify a qualified individual and at least one alternate who:
 1. speak fluent English;
 2. be located in the United States;
 3. Be available on a 24-hour basis;
 4. Be familiar with the implementation of the vessel response plan; and
 5. Be trained in the responsibilities of the qualified individual under the response plan.

The owner or operator must provide each qualified individual and alternate qualified individual identified in the plan with a document designating them as a qualified individual and specifying their full authority to:

1. Activate and engage in contracting with an oil spill removal organization(s);
2. Act as a liaison with the predesignated Federal On-Scene Coordinator (OSC); and
3. Obligate funds required to carry out response activities.

The owner or operator of a vessel may designate an organization to fulfill the role of the qualified individual and alternate qualified individual. The organization must then identify a qualified individual and at least one alternate qualified individual who meet the requirements of this section. The vessel owner or operator is required to list in the response plan the organization, the person identified as the qualified individual, and the person or persons identified as the alternate qualified individual(s).

- * General Plan Requirements - The plan must cover all geographic areas of the United States in which the vessel intends to handle, store or transport oil. The plan must be written in English. The plan must contain and be divided into the following sections:
 1. General information and introduction;
 2. Notification procedures;
 3. Shipboard spill mitigation procedures;
 4. Shore-based response activities;
 5. List of contacts;
 6. Training procedures;
 7. Drill procedures;
 8. Plan review and update procedures;
 9. Onboard notification checklist and emergency procedures (unmanned tank barges only);

Shipyard Oil Pollution Prevention Requirements

10. Geographic-specific appendix for each COTP zone in which the vessel operates; and
11. For vessels carrying oil as a primary cargo and unmanned tank barges, an appendix for vessel-specific information for each vessel covered by the plan.

The plan must contain the required contents for the vessel type as promulgated by the Coast Guard and be consistent with the National Contingency Plan and Area Contingency Plan.

- * Response plan requirements for unmanned tank barges carrying oil as a primary cargo - The requirements for unmanned tank barges include the following:
 1. An onboard notification checklist and emergency procedures document. This document must be maintained onboard the tanker barge. The complete response plan may be maintained elsewhere. The document provides the immediate notification information, and statement of responsibilities and actions to be taken by reporting personnel in the event of an oil discharge or substantial threat of a discharge.
 2. General Information and Introduction - This section of the plan details contact information on the tank barge owner and operator, a list of COTP in each area in which the tank barge will operate, a table of contents of the response plan, and the record of changes to the plan.
 3. Notifications procedures - This section details information on proper notifications, in order of priority, including persons to be notified in the event of a discharge of oil. Additionally, this section provides the information required when making a notification of an oil spill.
 4. Shipboard spill mitigation procedures - This section contains procedures to be followed by the tankerman to mitigate or prevent any discharge or threat of discharge of oil resulting from operational activities and casualties.
 5. Shore-based response activities - This section of the plan details information concerning procedures for coordinating the actions of the barge owner or operator, or qualified individual, with the actions of the predesignated Federal On-Scene Coordinator.
 6. List of Contacts - The name, location, and 24-hour contact information for key individuals and organizations must be included in this section of the response plan or, if more appropriate, in a geographic-specific appendix, and referenced in this section of the plan.
 7. Training procedures - This section of the response plan must address the training procedures and programs of the barge owner or operator to meet Coast Guard requirements.
 8. Drill procedures - This section of the response plan must address the drill program carried out by the barge owner or operator to meet the Coast Guard requirements.

Shipyard Oil Pollution Prevention Requirements

9. Plan review and update procedures - This section of the response plan must address the procedures to be followed by the barge owner or operator to meet the requirements to review and update the response plan, and the procedures to be followed for any post-discharge review of the plan to evaluate and validate its effectiveness.
 10. Geographic-specific appendices for each COTP zone in which a tank barge operates - These response plans appendices contain area specific information that could or would affect notification and spill response.
 11. Appendices for barge-specific information - These appendices provide information related to the specific barge for which the response plan is written.
- * Training - The response plan must address how training will be provided to the members of the vessel crew who have responsibilities under the plan, as well as the qualified individual and the spill management team. Records to document the training provided must be maintained and available for inspection by the Coast Guard.
 - * Drills - Response drills must be conducted as necessary to ensure the plan will function in an emergency. The following are the required drill frequencies for vessels covered by this section:
 1. Manned vessel onboard emergency procedures and qualified individual notification drills must be conducted monthly;
 2. Unmanned barge emergency procedures and notification of the qualified individual drills must be conducted quarterly;
 3. Shore-based spill management team tabletop drills must be conducted yearly; and
 4. Oil spill removal organization field equipment deployment drills must be conducted yearly.
 - * Inspection and maintenance of response resources - The owner or operator of a vessel required to submit a response plan under this part must ensure that containment booms, skimmers, vessels, and other major equipment listed or referenced in the plan are periodically inspected and maintained in good operating condition, in accordance with manufacturer's recommendations and best commercial practices. All inspections and maintenance must be documented, with the records maintained for three years.
 - * Plan submission, approval, and appeal procedures - The vessel response plan must be submitted to the Coast Guard for review and approval at least 60 days before the vessel intends to handle, store, transport, transfer or lighter oil in areas subject to the jurisdiction of the United States. If approved, the Coast Guard will provide a letter of approval to the vessel owner and/or operator.

Shipyard Oil Pollution Prevention Requirements

Oil Transfer Operations - 33 CFR 156 contains the oil and hazardous materials pollution prevention requirements for vessels and facilities during transfer of oil to or from vessels and/or facilities. All or parts of this section could be applicable to a shipyard if the shipyard transfers oil or hazardous materials on navigable waters to vessels with a capacity of 250 barrels or more, or owns and/or operates a vessel with a capacity of 250 barrels or more that engages in transfers of oil or hazardous materials to or from another vessel or a facility. Types of vessels which could be subject to the requirements that are also commonly owned or operated by shipyards include floating drydocks, barges used for holding tank slops, fuel barges and utility or support vessels.

Oil and Hazardous Materials Transfer Operations - Coast Guard requirements pertaining to oil and hazardous materials transfer operations include:

- * Person in charge: Limitations - No person may serve as the person in charge of transfer operations on more than one vessel at a time during transfers between vessels or between two or more vessels and a facility unless authorized by the COTP. Neither may a person serve as the person in charge of both a vessel and a facility during transfer operations unless authorized by the COTP.
- * Advance notice of transfer - The COTP may require a facility operator to notify the COTP of the time and place of each transfer operation at least 4 hours before it begins for facilities that are mobile, in a remote location, have a prior history of oil or hazardous material spills, or conduct infrequent transfer operations. In the case of a vessel to vessel transfer, the COTP may require a vessel operator of a lightering or fueling vessel to notify the COTP of the time and place of each transfer operation, as specified by the COTP, at least 4 hours before it begins.
- * Requirements for transfer - The Coast Guard's requirements for transfer of oil or hazardous materials generally fall into four main areas. These areas include the requirements for transfer equipment, the requirements for the person(s) in charge of transfer operations, the requirements for vapor control systems (if any) and lighting during night time transfer. No person may conduct a transfer operation unless all the applicable requirements have been met.
- * Discharge cleanup - Each person conducting the transfer operation must stop the transfer operation whenever oil or hazardous material from any source is discharged in the transfer operation work area; or into the water or upon the adjoining shoreline in the transfer area. No person may resume the transfer operation after it has been stopped , unless the oil or hazardous material discharged in the transfer operation work area is cleaned up; and the oil or hazardous material discharged into the water or upon the adjoining shoreline is cleaned up, or is contained and being cleaned up.
- * Connections - The Coast Guard requires that each person who makes a connection for transfer operations must ensure the connection is leak free. There are specific requirements for the materials used to bolt hose and/or pipe flanges together.
- * Declaration of inspection - No person may transfer oil or hazardous material to or from a vessel unless each person in charge has filled out and signed the declaration

Shipyard Oil Pollution Prevention Requirements

of inspection form. Additionally, no person in charge may sign the declaration of inspection unless he or she has determined by inspection, and indicated by initialling in the appropriate space on the declaration of inspection form, that the facility or vessel, as appropriate, meets for the requirements for transfer.

- * Supervision by person in charge - No person may connect or disconnect a hose, top off a tank, or engage in any other critical procedures during the transfer operation unless the person in charge supervises that procedure. Additionally no person may start the flow of oil or hazardous material to or from a vessel unless instructed to do so by either person in charge. No person may transfer oil or hazardous material to or from a vessel unless each person in charge is in the immediate vicinity and immediately available to the transfer personnel.
- * Equipment tests and inspections - The Coast Guard requires that specific equipment be tested and/or inspected to ensure it will meet required standards prior to conducting transfer operations. This equipment includes:
 1. Nonmetallic transfer hose;
 2. Transfer system relief valves;
 3. Pressure gauges;
 4. Loading arms and transfer pipe systems (including metallic hose);
 5. Each item of remote operating or indicating equipment.

Additionally, if a facility or vessel collects vapor emitted from a vessel cargo tank with a vapor control system, tests and/or inspections must be performed on specific equipment prior to conducting transfer operations. This equipment includes:

- 1. Each vapor hose, vapor collection arm, pressure relief valve and pressure sensor;
 2. Each detonation arrester and flame arrester; and
 3. Each hydrocarbon and oxygen analyzer.
- * Lightering of Oil and Hazardous Materials Cargoes - The Coast Guard has requirements for the lightering of vessels in the marine environment beyond the baseline from which the territorial sea is measured when the oil or hazardous material lightered is destined for a port or place subject to the jurisdiction of the U.S. The Coast Guard requirements do not apply to lightering operations involving public vessels. These requirements are unlikely to apply to any shipyard owned or operated vessels.

Non-transportation Related Facilities - The EPA's requirements for non-transportation related onshore and offshore facilities are located in 40 CFR Part 112. That portion of the shipyard complex that would be subject to these requirements would be that portion of the shipyard facilities, equipment or operations which is not subject to the marine transportation related facilities requirements of the United States Coast Guard.

Shipyard Oil Pollution Prevention Requirements

The EPA's requirements are mainly concerned with oil spill contingency planning and preparation, as opposed to the operational or equipment requirements imposed by the Coast Guard on marine transportation related facilities. The EPA's planning requirements take the form of either a Spill Prevention Control and Countermeasures Plan ("SPCC") and/or a "Facility Response Plan" ("FRP"). It is important to note that if a facility meets the applicability requirements to prepare a SPCC and a FRP, both plans must be prepared. In other words, the requirement to prepare one plan does not supersede the requirement to prepare the other, if the applicability threshold has been met for both.

General Applicability: The EPA's requirements are applicable to the owners and operators of non-transportation related facilities (or those portions of a facility complex that are non-transportation related) onshore and offshore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing or consuming oil and oil products, and which, due to their location, could reasonably be expected to discharge oil in harmful quantities¹⁰, into or upon the navigable waters of the United States or adjoining shorelines.

In the case of shipyards the applicability would apply to the equipment and operations not subject to Coast Guard requirements. Some examples are on site oil storage and transfer operations such as aboveground or below ground fuel storage tanks and gasoline station fueling operations. Oil based chemical products stored and used within the facility such as lube and machining oils, oil based paints and electrical transformer oils would also be included.

There are minimum storage capacity requirements below which a facility would not be subject to the EPA requirements. These minimum storage capacity requirements are:

1. The underground buried storage capacity of the facility is 42,000 gallons or less of oil, and
2. The storage capacity of the facility , which is not buried, is 1,320 gallons or less of oil, provided no single container has a capacity in excess of 660 gallons.

As these minimum threshold requirements are relatively low, most shipyards will find that they are subject to the EPA requirements. Note that the applicability threshold to prepare a Facility Response Plan is different than the general applicability requirements.

Requirements for preparation and implementation of Spill Prevention Control and Countermeasure Plans ("SPCC") - Owners or operators of onshore and offshore facilities must prepare a Spill Prevention Control and Countermeasure Plan, in writing and in accordance with the EPA requirements. The plan must be prepared within six months after the start of operations and must be fully implemented as soon as possible, but no later than one year after the start of operations.

¹⁰ Violate applicable water quality standards, or cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

Shipyard Oil Pollution Prevention Requirements

The SPCC Plan must be reviewed and certified by a Registered Professional Engineer. By means of this certification, the engineer, having examined the facility and being familiar with the pertinent provisions, shall attest that the SPCC Plan has been prepared in accordance with good engineering practices.

The owners or operators of a facility for which an SPCC Plan is required must maintain a complete copy of the Plan at the facility if the facility is normally attended at least 8 hours per day, or at the nearest field office if the facility is not so attended, and shall make the Plan available to the Regional Administrator for on-site review during normal working hours.

Spill Prevention, Control and Countermeasures: The EPA has specific requirements for the preparation, amendment and implementation of a SPCC Plan, including the following:

- * Previous spill history - A facility which has experienced one or more spill events within twelve months prior to the effective date of 40 CFR Part 112 should include a written description of each such spill, the corrective action taken, and plans for preventing recurrence.
- * Reasonable potential for equipment failure - Where experience indicates a reasonable potential for equipment failure (such as tank overflow, rupture, or leakage), the plan should include a prediction of the direction, rate of flow, and total quantity of oil which could be discharged from the facility as a result of each major type of failure.
- * Appropriate containment and/or diversionary structures or equipment - Appropriate containment and/or diversionary structures or equipment to prevent discharged oil from reaching a navigable water course should be provided. For onshore facilities the EPA requires one of the following preventive systems or its equivalent:
 1. Dikes, berms or retaining walls sufficiently impervious to contain spilled oil;
 2. Curbing;
 3. Culverting, gutters or other drainage systems;
 4. Weirs, booms or other barriers;
 5. Spill diversion ponds;
 6. Retention ponds; or
 7. Sorbent materials.
- * Onshore facilities (except for onshore oil production facilities) must include a complete discussion of conformance with the applicable guidelines for the following subject areas, and other effective spill prevention and containment procedures (or, if more stringent, with State rules, regulations and guidelines):
 1. Facility Drainage;
 2. Bulk storage tanks;

Shipyard Oil Pollution Prevention Requirements

3. Facility transfer operations, pumping, and in-plant process; and
4. Facility tank car and tank truck landing/unloading;
5. Inspections and records;
6. Security; and
7. Personnel, training and spill prevention procedures.

The EPA provides specific guidance in the regulations concerning each subject area listed above. This guidance should be reviewed prior to the development of a SPCC plan.

- * SPCC plan amendment by the Regional Administrator - The EPA Regional Administrator may require the facility owner/operator to amend their SPCC plan. A facility is required to provide certain information to the Regional Administration, which starts the amendment process, if and when the following conditions are met:
 1. The facility has discharged more than 1,000 gallons of oil into the water in a single spill event; or
 2. The facility has discharged oil in harmful quantities into the water in two spill events occurring within any twelve month period.

Based upon its review of the information provided the EPA may require the facility to amend their SPCC as necessary to prevent and to contain discharges of oil from the facility.

- * SPCC plan amendment by the facility owners or operators - Owners or operators of facilities must amend their SPCC plan whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shore lines. Such amendments shall be fully implemented as soon as possible, but not later than six months after such change occurs.
- * SPCC plan review - A review of the SPCC plan by the facility owner/operator must be made at least once every three years from the date such facility becomes subject to this provision. As a result of this review and evaluation, the owner or operator must amend the plan within six months of the review to include more effective prevention and control technology if:
 1. such technology will significantly reduce the likelihood of a spill event from the facility; and
 2. if such technology has been field-proven at the time of the review.

Amendments to an SPCC Plan must be certified by a Professional Engineer to be valid.

Facility Response Plan: The owner or operator of any non-transportation-related onshore facility that, because of its location, could reasonably be expected to cause substantial

Shipyard Oil Pollution Prevention Requirements

harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines must prepare and submit a facility response plan to the EPA Regional Administrator. The EPA defines substantial harm based on a combination of oil storage capacity and potential environmental impact factors. The applicability standard most likely to subject a shipyard to this requirement is the definition of substantial harm as a facility that transfers oil over water to or from vessels and has a total oil storage capacity greater than or equal to 42,000 gallons (1,000 barrels). All facility response plans must be consistent with the requirements of the National Oil and Hazardous Substance Pollution Contingency Plan and applicable Area Contingency Plans.

- * Facility Response Plan format - The EPA requires that a Facility Response Plan (“FRP”) follow the format of the model facility-specific response plan provided by the EPA in Appendix F of 40 CFR 112, unless an equivalent response plan has been prepared to meet state or other federal requirements. To be acceptable the FRP must address the following elements:

1. Emergency response action plan;
2. Facility information;
3. Information about emergency response;
4. Hazard evaluation;
5. Response planning levels;
6. Discharge detection systems;
7. Plan implementation;
8. Self-inspection, drills/exercises, and response training;
9. Diagrams (site and drainage plans); and
10. Security systems.

The EPA provides specific guidance concerning the appropriate content of each the subject areas above. This guidance must be consulted prior to preparing the FRP and its subsequent submittal to the Regional Administrator.

- * Facility response training - The facility owner or operator must develop a facility response training program to train those personnel involved in oil spill response activities. The EPA recommends that the training program be based on the USCG's Training Elements for Oil Spill Response, as applicable to facility operations. An alternative program can also be acceptable subject to approval by the Regional Administrator. Training includes:

1. Proper instruction of facility personnel in the procedures to respond to discharges of oil and in applicable oil spill response laws, rules, and regulations.
2. Training shall be functional in nature according to job tasks for both supervisory and non-supervisory operational personnel.

Shipyard Oil Pollution Prevention Requirements

3. Trainers shall develop specific lesson plans on subject areas relevant to facility personnel involved in oil spill response and cleanup.
 - * Facility response drills/exercises - The facility owner or operator must develop a program of facility response drills/exercises, including evaluation procedures. The EPA recommends a program that follows the National Preparedness for Response Exercise Program (PREP). An alternative program can also be acceptable subject to approval by the Regional Administrator.

Tank truck and rail car - If the shipyard owns or operates tank trucks and/or rail cars used for the inter or intrastate transportation of oil in commerce, certain Department of Transportation requirements may apply. 49 CFR 130 is applicable to transporters that transport petroleum oil¹¹ in packagings having capacities of 3,500 gallons or more. Additionally, the requirements apply to transporters of oil¹² in a quantity of 42,000 gallons or more per packaging. Possible shipyard operations most likely to trigger the applicability of these requirements are transport of fuel or tank slops via tank trucks or rail car from the shipyard to an off site receiving facility. Another, although less likely, possibility would be a shipyard's operation of a very large (3,500 gallons or more) capacity fuel truck.

49 CFR 130 contains the oil spill prevention and response planning requirements for oil transporters meeting the requirements above. These requirements include:

- * General requirements - No person may offer or accept for transportation or transport oil subject to this part unless that person complies with the DOT requirements; and has been instructed on the applicable requirements of this part.
- * Communication requirements - No person may offer oil subject to the requirements for transportation unless that person provides the documentation to the person accepting the oil for transportation indicating the shipment contains oil. Additionally no person may transport oil subject to the requirements unless a readily available document indicating that the shipment contains oil is in the possession of the transport vehicle operator during transportation.
- * Packaging requirements - Each packaging used for the transportation of oil must be designed, constructed, maintained, closed, and loaded so that, under conditions normally incident to transportation, there will be no release of oil to the environment.
- * Response plans - No person may transport oil subject to the requirements unless that person has a current basic written plan that:

¹¹ Petroleum oil means any oil extracted from geological hydrocarbon deposits, including fractions and derivatives thereof.

¹² Oil means oil of any kind or in any form, including, but not limited to, petroleum, vegetable oil, animal oil, fuel oil, sludge, oil refuse, an oil mixed with waste other than dredged spoil.

Shipyard Oil Pollution Prevention Requirements

- (1) Sets forth the manner of response to discharges that may occur during transportation;
- (2) Takes into account the maximum potential discharge of the contents from the packaging;
- (3) Identifies who will respond to a discharge;
- (4) Identifies the appropriate persons and agencies (including their telephone numbers) to be contacted in regard to such a discharge and its handling, including the National Response Center;
- (5) For each motor carrier, is retained on file at that person's principal place of business and at each location where dispatching of motor vehicles occurs; and for each railroad, is retained on file at that person's principal place of business and at the dispatcher's office.

Additionally no person may transport oil in a quantity greater than 1,000 barrels (42,000 U.S. gallons) unless that person has a current comprehensive written plan that:

1. Conforms with all requirements specified above;
 2. Is consistent with the requirements of the National Contingency Plan and Area Contingency Plans;
 3. Identifies the qualified individual having full authority to implement removal actions, and requires immediate communications between that individual and the appropriate Federal official and the persons providing spill response personnel and equipment;
 4. Identifies, and ensures by contract or other means the availability of private personnel (including address and phone number), the equipment necessary to remove to the maximum extent practicable a worst case discharge (including a discharge resulting from fire or explosion) and to mitigate or prevent a substantial threat of such a discharge;
 5. Describes the training, equipment testing, periodic unannounced drills, and response actions of facility personnel, to be carried out under the plan to ensure the safety of the facility and to mitigate or prevent the discharge, or the substantial threat of such a discharge; and
 6. Is submitted, and resubmitted in the event of any significant change, to the Associate Administrator for Hazardous Materials Safety (for portable tanks), to the Federal Railroad Administrator (for tank cars), or to the Federal Highway Administrator (for cargo tanks).
- * Response plan implementation - If a discharge of oil occurs during transportation, the person transporting the oil shall take appropriate action to implement the required plan.

Onshore Oil Pipelines - The operators of onshore oil pipelines may be subject to oil pollution prevention requirements of the Department of Transportation under 49 CFR

Shipyard Oil Pollution Prevention Requirements

194. A shipyard would only be subject to these requirements if they operated an oil pipeline that meet the applicability standard of the regulation. A possible situation in which a shipyard may be subject to the requirements would be if it operated a pipeline that transported fuel oil from an off or onsite tank farm to a fueling station at the shipyard. Another possibility would be a pipeline operated by the shipyard to transport fuel or tank slops from a ship to a receiving facility, on or offsite of the shipyard.

The requirements of 49 CFR 194 consist of oil spill response planning and preparation, including:

- * Operators required to submit plans - Operators of oil pipelines must prepare and submit required response plans that meet the requirements of the Department of Transportation.
- * Response resources - Each operator must identify and ensure, by contract or other approved means, the resources necessary to remove, to the maximum extent practicable, a worst case discharge and to mitigate or prevent a substantial threat of a worst case discharge.
- * Training - Each operator must conduct training to ensure all personnel know how to properly control a discharge or threatened discharge of oil from the pipeline.

Shipyard Oil Pollution Prevention Requirements

Objective of this Training Session: To explain the concept and requirements of Integrated Contingency Planning.

Introduction: Most shipyards are subject to multiple oil spill contingency planning requirements, ranging from at least two to possibly eight different contingency plans. Much of the required content of the plans is redundant. Additionally, having multiple plans inherently creates confusion as to which plan should be implemented under which conditions. Recognizing that multiple plan requirements for shipyards and other facilities were costly and confusing, the agency members of the National Response Team (“NRT”) have prepared guidance for consolidating multiple plans into one functional emergency response plan or integrated contingency plan (“ICP”) (also referred to as the “One-Plan”). The one-plan guidance is intended to be used by any facilities subject to Federal Contingency Planning regulations in order to prepare emergency response plans for oil and non-radiological hazardous substances. In this context, the term facility is meant to have wide connotation and may include, but is not limited to, any mobile or fixed onshore or offshore building, structure, installation, equipment, pipe or pipeline.

ICP Organization: The ICP format is organized into three main sections: Introductory Section, Core Plan and Annexes. Each section of the ICP will be discussed in greater detail in the following material.

- A) Introductory Section - The introduction section of the plan is designed to provide facility response personnel, outside responders and regulatory officials with information about the plan and the entity it covers. It calls for a statement of purpose and scope, a table of contents, information on the current revision date of the plan, general facility information, and the key contacts for plan development and maintenance.
- B) Core Plan - The core plan section is intended to contain essential response guidance and procedures. It describes the essential steps necessary to initiate, conduct and terminate an emergency response action. These steps include recognition, notification and initial response, including assessment, mobilization and implementation. Additionally, the core plan section should reflect a hierarchy of emergency response levels used for classifying emergencies according to seriousness, and assigning an appropriate standard response or series of response actions to each level. Appropriate response levels are based on: (a) the need to initiate time-urgent response actions to minimize or prevent unacceptable consequences to the health and safety of workers, the public or environment; and (b) the need to communicate critical information concerning the emergency to offsite authorities.
- C) Annexes - The annexes are designed to provide key supporting information for conducting an emergency response under the core plan, as well as to document compliance with regulatory requirements not addressed elsewhere in the ICP. There are eight specific annexes recommended in the ICP format. These include:
 1. Facility and Locality Information;

Shipyard Oil Pollution Prevention Requirements

2. Notification;
3. Response Management System;
4. Incident Documentation;
5. Training and Exercises/Drills;
6. Response Critique and Plan Review and Modification Process;
7. Prevention; and
8. Regulatory Compliance and Cross-Reference Matrices

Additionally, the ICP anticipates that the use of linkages (i.e., references) to other internal plans from various annex sections may be used until such plans can be fully incorporated into the ICP. Linkages may also be made to external plans such as the Local Emergency Planning Committee plan and Area Contingency Plan, as appropriate and required by the facility.

Contingency Planning Matrix:: To assist facilities identifying applicable requirements in Federal contingency planning requirements, the National Response Team developed an ICP Development Matrix of applicable requirements. This matrix is attached as reference to this training session to illustrate how the various requirements of different regulations can be associated with the ICP format. A matrix of this type could be used to demonstrate compliance with (see Annex 8 above) a facility's various federal and/or state contingency planning requirements.

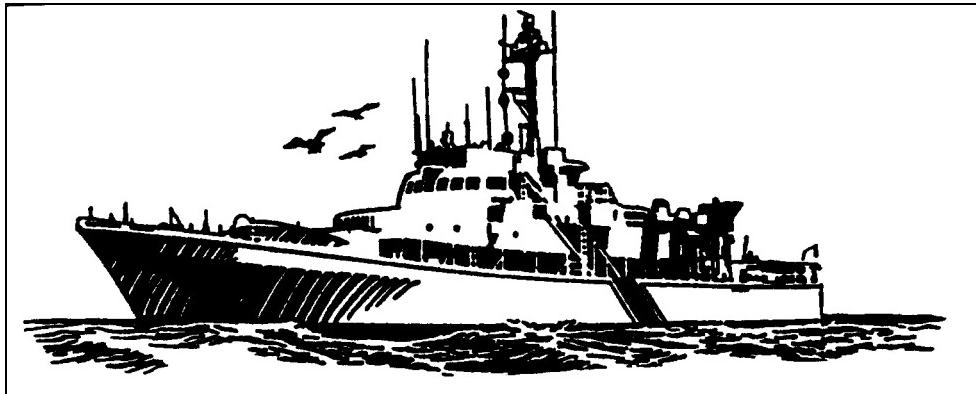
Contingency Planning Requirement Matrix

Facility or Complex	Contingency Planning Requirement	Agency	Citation
Non-Transportation Related	SPCC	EPA	40 CFR 112.7
	Facility Response Plan	EPA	40 CFR 112.20
Marine-Transportation Related	Operations Manuals	USCG	33 CFR 154
	Facility Response Plan	USCG	33 CFR 154
Vessels	(Requirements in 33 CFR 156)	USCG	33 CFR 156
	Vessel Oil Spill Response Plan	USCG	33 CFR 155
Tank truck or rail car	Oil Spill Response Plan	DOT	49 CFR 130.31
Oil Pipeline	Oil Pipeline Response Plan	DOT	49 CFR 194

MRT FACILITY RESPONSE PLANNING MATRIX

CITATION	CITATION TITLE	SUBSTANTIAL HARM FACILITES	SIGNIFICANT AND SUBSTANTIAL HARM FACILITIES
154.1026	Qualified individual and alternate qualified individual	Required	Required
154.1028	Methods of ensuring the availability of response resources by contract or other approved means	Required	Required
154.1029	Worst case discharge	Required	Required
154.1030	General Response Plan Contents	Required	Required
154.1035	Specific Requirements for facilities that could reasonably be expected to cause significant and substantial harm to the environment	Not Applicable	Required
154.1040	Specific requirements for facilities that could reasonably be expected to cause substantial harm to the environment	Required	Not Applicable
154.1041	Specific response information to be maintained on mobile MTR facilities	Required only if MRT facility is mobile	Not Applicable
154.1045	Response plan development and evaluation criteria for facilities that handle, store, or transport Group I through Group IV oils	Required	Required
154.1047	Response plan development and evaluation criteria for facilities that handle, store, or transport Group V oils	Required or 154.1049	Required or 154.1049
154.1049	Response plan development and evaluation criteria for facilities that handle, store, or transport non-petroleum oils	Required or 154.1047	Required or 154.1047
154.1050	Training	Required	Required
154.1055	Drills	Required	Required
154.1057	Inspection and maintenance of response resources	Required	Required
154.1060	Submission and approval of procedures	Required	Required
154.1065	Plan revision and amendment procedures	Required	Required

Shipyard Person In Charge (PIC) Training Program



For:

**Personnel Responsible for Bulk Oil and Hazardous Material
Transfers Over Water**

**To Enhance Compliance With
U. S. Coast Guard Regulations 33 CFR 154 and 156**

**Materials were Prepared by:
Zachary F. Jacobs and Jacobs Consulting**



For:

**Austin Environmental Inc.
and**

**The National Shipbuilding Research Program (NSRP 0544)
May 1999**

PIC Training Program Table of Contents

The PIC training program includes 10 sessions that are designed to provide in class training to PIC personnel. The program is designed to be presented in 4 to 5 hours. At the end of the class, students will be given a 50 question comprehensive examination. Also, the training program includes 5 On-The-Job (OJT) modules which should be completed after the training class and returned to the instructor for evaluation. The training sessions are as follows:

Session 1.0 - Introduction To Shipyard Person-In-Charge Training

- Potential For Pollution
- Principal Subjects Presented
- Who Needs Training?
- What Is A Shipyard PIC?
- Purpose of the Training
- Learning Objectives
- Elements Of A Successful Training Program

Session 2.0 - Pollution Prevention Training For PICs (With OJT Module)

- Environmental Laws and Regulations
- What Are Best Management Practices and Pollution Prevention Practices?
- Why Prevent Pollution?
- Understanding Pollution Pathways, Spill Pathways, and Potential Pollutants
- Secondary Containment
- Material Transfers and Transportation
- Dry-Dock, Ways, and Waterfront Pollution Prevention
- Major Causes of Oil Spills
- Pollution Prevention Questions

Session 3.0 - The Letter of Intent, Adequacy, And The Shipyard Operations Manual

- The Letter of Intent (LOI)
- The Letter Of Adequacy
- The Shipyards Operations Manual
- Operations Manual Content
- Facility Examination

Session 4.0 - Shipyard Person In Charge

- PIC Requirements And Qualifications
- PIC Evidence of Designation
- Transfer Operation Responsibilities
- PIC Required Recordkeeping

Session 5 - Required Equipment For Transfer Operations (With OJT Module)

- Emergency Shutdown Equipment and Procedures
- Small Discharge Containment
- Containment Discharge Removal
- Spill Containment Equipment
- Communication System Equipment and Procedures
- Lighting Equipment Requirements
- Hose Assembly Equipment
- Closure Devices and Equipment
- Monitoring Equipment
- Loading Arms and Associated Equipment

PIC Training Program Table of Contents

Session 6.0 - Safety Concerns For PICs (With OJT Module)

Safety and Emergency Equipment
Hazardous and Flammable Material Hazards
Potentially Dangerous Ignition Sources
Hot Work Around The Transfer Area
Tank Cleaning and Gas Freeing
Warning Signs and Markings
Organization Increases Safety and Performance
Proper Personal Protective Equipment (PPE):
Facility and Vessel Access and Control

Session 7.0 - Transfer Operation And Procedures (With OJT Module)

Duties Of The PIC and Other Transfer Personnel
Vessel and Facility PIC Responsibility
PIC Organization and Control
Start-Up Criteria and The Declaration Of Inspection (DOI)
Transfer Hose System Procedures
Spill Prevention Inspections
Vessel Stability Procedure
PIC Communication for Operations and Emergency Response
Declaration Of Inspection (DOI)
Internal Oil Transfers

Session 8.0 - PIC Spill Response Operations

The Spill Response Plan
Internal Notification Procedures For Spills, Leaks, Discharges and Other Incidents
Release/Discharge And External Notification Procedures
What Constitutes a Discharge or Release?
What Constitutes a Spill?
External Notification
USCG Inspections And Spill Investigations
Spill Prevention and Containment Practices
On-Site Transfer Operation Spill Scenarios
Example Scenario - Tank Overfill
Student and Instructor Scenario Drills

Session 9.0 - Post Transfer Operations (With OJT Module)

After The Transfer
Always Use the Lock-Out Tag-Out Procedures
Proper Containment, Piping, and Transfer Equipment Storage
Area Clean-Up
Proper Waste Accumulation and Control

Session 10.0 PIC Training Summary, Continuous Improvement and On-The-Job Training (OJT)

Minimizing Potential For Spills
Organization and Procedures Are The Key To Pollution Prevention
PIC Training Objectives
Continuous Improvement
Minimum PIC Training Criteria On The Job Training (OJT) Modules
Comprehensive Examination

Session 1.0 - Introduction To Shipyard Person-In-Charge (PIC) Training

The U.S. Coast Guard (USCG) and the Department of Transportation (DOT) are the main federal agencies that regulate bulk transfer operation of oil and hazardous material over water. Transfers occur in large and small shipyards throughout the nation. Bulk hazardous material transferred by shipyards can include crude oil, fuel oil, JP-5, oily waste water, sludge, hydraulic fluids and a variety of other similar substances. The regulations enforced by the USCG and DOT are developed to ensure environmentally safe transfer of oil and hazardous material, in bulk, to and from vessels. These regulations are outlined in the 33 Code of Federal Regulations (CFR) parts 154 and 156.

In the shipyard, the Person in Charge (PIC) is responsible for safe and effective transfer operations. It is very important to understand that transfer of hazardous materials to and from ships and barges is a potentially risky process due to the close proximity of state waters. Transfer failures caused by improper procedures, lack of procedure adherence, and/or equipment failures can result in significant releases of hazardous substances to the environment. Releases are known as spills that reach the nearby water. Spills are expensive to clean-up, can result in excessive fines, and put shipyard employees and the environment at risk.

The training sessions provide a basic overview of rules, regulations and procedures for PICs and transfer operation personnel. Continuous on the job training and operational improvement will help solidify the learning experience.

Who Needs Training?

Training is required for all individuals who are in charge of transfer operations for the facility and/or the vessel, and also individuals with direct association to the transfer process and related equipment.

What Is A Shipyard PIC?

There are actually two designated PICs for every transfer operation. One is the facility PIC and the other is the vessel PIC. These two individuals have primary responsibility for a safe transfer operation. They are in constant communication with transfer operation personnel to direct activities and ensure that all procedures are followed. Other individuals who participate in the transfer operation may receive PIC training although they may only act as transfer operation personnel.

Purpose of the Training

- To ensure that all PICs understand shipyard environmental and safety policies and procedures that cover Oil and Hazardous Material Transfer Operations.
- To provide protection of State and Federal waters from pollution during oil transfer operations.
- To ensure that PICs are adequately trained to perform their functions in a safe and effective manner within the guidelines of the Operations Manual and associated procedures.

Learning Objectives

After completing all of the training sessions in the module, personnel will be able to:

- Understand the principle purpose surrounding pollution prevention and the need to operate in compliance with the Operations Manual and applicable environmental regulations.
- Understand the Rules and Regulations associated with Oil and Hazardous Materials Transfer operations, as described in 33 CFR 154 - 156.
- Perform duties and understand responsibilities of the PIC and to ensure transfer operations are safe and free of accidents. PICs must also learn to use proper procedures, equipment, and personal protective equipment (PPE).
- Perform duties and understand responsibilities as an assistant to the PIC or an operational person before, during, and after transfer operations.
- Perform inspections and evaluation of operations and equipment associated with the transfer process.
- Respond quickly and accurately to emergencies during transfer operations using site spill emergency procedures. This will include decision making during abnormal conditions that require the PIC to make quick decisions.
- Understand “Emergency Spill Prevention”, which are those measures taken to avert a spill during, or following, an abnormal event such as a fire, injury, or equipment malfunction.

A Successful Training Program

The PIC training program needs several elements in order to be considered successful. A successful program will train PICs to perform their operations in an organized manner with minimal potential for spills and other accidents. The backbone to a successful program is presented in the following sections:

Management Support

Strong management commitment to environmental protection and support for operational procedures and facilities is critical. This commitment should also transfer into response plans, procedures and equipment to aid in oil spill prevention and response. In other words, management must support the goal of zero discharge to the adjacent waters.

An Environmental Ethic

Employees (including management), need to be aware of the environmental and public health consequences of hazardous spills and must develop an attitude that supports spill prevention as a high priority, second only to employee safety.

Clear Training and Job Performance Objectives

Training objectives for PICs need to provide a clear understanding of what the PIC is expected to know and perform. For example, Clearly identified skills or tasks that need to be learned and performed, as well as the training method and number of hours needed must be well defined.

Adequate Course Content

All topics pertinent to the normal operation of transfer, storage, handling, and/or monitoring of oil need to be addressed. During transfer operations, knowledge of the entire transfer process, as well as knowledge of all equipment and personnel involved is important. Topics concerning preventative maintenance (PM), emergency preparedness, emergency response and impacts of oil spills are critical to an effective program.

Clearly Written And Presented Procedures

For an effective education program, it is essential to have clearly written procedures for specific functions identified in the transfer, handling, storage and monitoring of over-water transfers.

Effective Training Delivery

Effective training methods include performance-based training, on-the-job training, competency checking, and consistent training materials (including student manuals and handouts). A competent and experienced trainer is also an important part of an effective training program.

Drills and Exercises to Enhance Learning and Understanding

Employees need to practice the transfer process and understand what to do in abnormal or emergency situations. This can be accomplished through table-top drills and exercises and on the job training (OJT) modules. Employees can also learn from oil spill drills conducted under the National Preparedness for Response Exercise Program (PREP) and the Office of Oil Spill Prevention and Response (OSPR).

Evaluation of Student Competence

The shipyard should have a means of determining whether an employee can perform his or her job function. The combination of written testing and OJT performance review can offer an effective method of evaluation. Hands-on performance should be evaluated to assure comprehension and ensure a clear understanding of procedures.

Evaluation and Improvement of Training and Procedures

A method and procedure for modifying and improving the training program based on employee feedback should be in place. The PICs are encouraged to critique the lesson plan, training program and the shipyard procedures in order to improve the overall effectiveness of the program.

Employee Involvement and Continuous Improvement

It is the responsibility of all shipyard workers to prevent pollution and increase program effectiveness. Employees should continuously improve the procedures and methods used for transferring oils and hazardous materials. Procedures are most effective when they are developed by the individuals who are responsible for performing the job functions.

Maintenance of Training Records

Shipyard PIC Training Program

Records need to be specific and should include the following information: Employee name and badge number, training date, course name or content, hours, trainer, supervisor and the signatures of the trainer and the employee.

Session 2.0 - Pollution Prevention Training For PICs

The shipyard is committed to maintaining the quality of the environment, which includes maintaining the quality of the air, water and land. The shipyard uses several Best Management Practices (BMPs) and other Pollution Prevention Practices (PPPs) in an effort to control and minimize the potential for pollution. All shipyard employees have an individual and corporate responsibility to comply with environmental laws and implement shipyard pollution prevention practices.

Strict adherence to the shipyard's Spill Prevention Control and Countermeasure (SPCC) Plan, Best Management Practices (BMP) Plan, Storm Water Pollution Prevention (SWPP) Plan and the Oil Transfer Operations Manual is directed by shipyard management for compliance with environmental regulations. All of these plans require that the shipyard develop and implement practices and facilities to minimize the likelihood for pollution in water that are directly adjacent to the shipyard.

The continued implementation of environmental compliance programs and procedures involves a substantial effort from all shipyard workers. Employees must be dedicated to preserving the environment and continuously improving operational practices. Environmental laws and regulations, can in some cases, appear to be an enormous burden, interrupting the primary work objectives. However, through cooperation and team-work, the shipyard can make environmental preservation and pollution prevention an integral part of the business process.

Environmental Laws and Regulations

The United States of America has developed a strict set of laws to protect the environment we live in. **The Environment consists of; the air we breath, the ground we live on and grow food from, and the water we drink, fish from, and swim in.** The Environmental Protection Agency (EPA), with support from several Local and State agencies, enforce environmental laws in the following areas:

Water Quality: The Clean Water Act (CWA) and the Oil Pollution Prevention Act (OPA90):

State and Federal clean water laws that regulate discharges to Federal or State bodies of water. Zero Pollutant Discharge to the State and Federal Waters is the shipyard's goal.

Air Quality : Federal Clean Air Act (CAA) and Local Air Laws and Regulations:

State and Federal clean air laws that restrict the use of materials and processes that pollute the air, including solvents, paints, adhesives, combustion engines, and grit blasting operations.

Land Quality: Resource Conservation and Recovery Act (RCRA) Hazardous Waste Laws:

Hazardous waste laws that require all waste generated at the shipyard be disposed of within specific guidelines dictated by Local, State and Federal Regulations.

Hazardous Communications and Worker Safety: Environmental and safety laws that require employees to know about hazardous materials and waste safety. A worker who knows how to handle hazardous materials will minimize the potential for pollution and ensure safety.

Violations of environmental laws are expensive and could land you in jail. Fines range from \$1,000 to \$25,000 per day for violations of environmental laws.

What Are Best Management Practices and Pollution Prevention Practices?

Pollution Prevention Practices are generally referred to as Common Sense, Low Technology Procedures, Activities, and Equipment that help prevent or minimize the potential for pollution of the environment. The management of situations with the potential for pollution is the basis of pollution prevention. Implementation of pollution prevention ideas and procedures is required by law.

Change Or Modify The Way You Perform Your Work Practices!

Where you perform activities can help prevent pollution

How you perform activities can help prevent pollution

When you perform activities can help prevent pollution

What activities you perform can help prevent pollution

PICs must implement pollution prevention procedures that integrate with transfer activities. It is important to be continuously aware of the environment to ensure that spills do not occur.

Shipyard Proactive Efforts

Proactive equipment, preventative maintenance, housekeeping, proper use of equipment, spill prevention and proper clean-up are excellent pollution prevention efforts. Employees are asked to spread the word about pollution prevention at the shipyard.

Proper Equipment and Facilities

PIC trained employees need proper equipment to prevent pollution. Facility modifications may be necessary to protect the environment.

Proper Recycling, Treatment and Handling of Hazardous Substances

Proper disposal of hazardous waste is crucial. Segregate waste streams, discharge contaminated liquids to wastewater treatment, sewer or off-site disposal.

Why Prevent Pollution ?

1. Ethics! It's Wrong to Pollute the Environment: We have the technology to prevent pollution and we must use it. Don't dump your "problems" on someone else - take responsibility for your actions and your area of responsibility. We must ALL be committed to pollution prevention.

2. Its the Law! The Shipyard and Individuals may be fined for polluting the environment. In some cases, individuals (this means YOU!) have gone to jail for polluting of the environment.

Understanding Pollution Pathways, Spill Pathways and Potential Pollutants

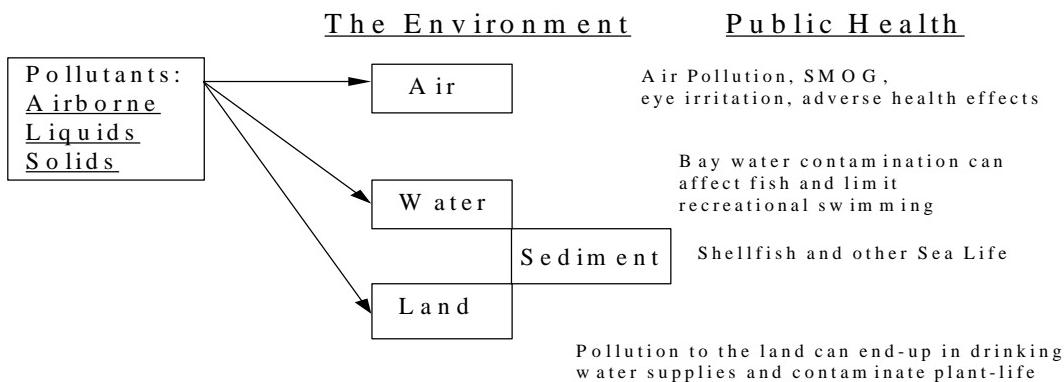
Shipyards use a variety of chemicals and hazardous materials that can be transported to the environment if an accident should occur. Accidents can occur at any time or place in the shipyard. However, many specific areas can be identified as being high risk. High risk areas have large volumes of potential pollutants and/or a ready access pathway leading to the bay.

PIC employees must be aware of their local surroundings near the transfer area and learn to identify potential pollution pathways leading to adjacent waters.

Risk is a Key Element

The probability that a pollutant will reach the environment must be assessed based on the process type, amount of materials involved and the proximity to a pollution pathway.

For example: (Fuel Transfer + Large Liquid Volumes + Over Water = High Risk Situation)

P o l l u t i o n P a t h w a y s

This high risk situation is the reason for PIC training and the shipyard Operations Manual.

Storm Drains Are a Major Pathway. They are located throughout the shipyard near the shoreline or inside the ship work-shop areas, roadways and material storage areas. All storm drains discharge into the local waterways. Only storm water is allowed to discharge into the storm drains.

Piers, Graving Dock, Floating Dry-Dock, and the Building Ways are considered high risk because of potentially high volumes of material usage, storage and the close proximity to the bay. PICs are continuously working in these areas and must constantly understand the risk of immediate discharge to the water. In these areas, measures must be in place to ensure that accidental spills can be contained.

It is each individual employees responsibility to understand the spill pathway risks associated with their specific work areas. PICs must take the time to investigate pathways in the transfer area prior to beginning operations. All pathways must be blocked prior to the start of the pumping operations. Blocking the pathway includes using dikes, dams, secondary containment, scupper plugs, bungs, and other means.

Note: Major pathways to the water are storm drains, utility trenches, direct runoff channels, freeports, scuppers and drains on piers and ships, and unsealed manholes.

Block the Pathway and Eliminate the Source!

Secondary Containment

What is Secondary Containment?

The primary container is the can, pipe or tank where a material is located. Secondary containment is a containment system that will collect the material if the primary container has a leak or puncture. The PIC will use a variety of secondary containment systems including drip pans, tarps, secondary containment pallets, berms, sand bags, bung plugs and several others.

It is a standard practice in the shipyard to transfer oils, paints, solvents and other shipyard liquid materials in a location that reduces the possibility for spills and contains spills. These areas should be bermed or otherwise have a secondary containment system. Also, when making or breaking hose connections, secondary containment should be used, especially in areas with immediate access to storm drains, drainage trenches and other pathways leading to the water.

When the secondary containment becomes full of rain water, the department responsible for the container should have it pumped out.

Material Transfers and Transportation

The shipyard transports hazardous materials and waste throughout the entire facility using trucks, forklifts, hand-trucks, cranes, mule trains and other methods. Many areas of the shipyard have rough terrain which may lead to spills if loads are not properly secured.

When the PIC is involved with transportation, it is their responsibility to ensure that all hazardous materials and wastes are properly prepared for transportation. This may include properly secured lids, plugged bungs, proper labeling, and others. Material and waste can be secured to transportation pallets by using cellophane wrap, nylon strap/rope, walled containment pallets, or some other method that minimizes the potential of the load spilling during transportation.

Hazardous Materials and waste loads should be kept to a manageable size while being transported. Do not oversize hazardous materials or waste loads. Secondary containment pallets are useful when transporting hazardous materials and wastes. Individuals who transport materials and wastes in the shipyard should be aware of the risks associated with spilling hazardous materials and waste.

Dry-Dock, Ways, and Waterfront Pollution Prevention

The dry-dock, piers and other waterfront areas are considered to be high spill and pollutant discharge risk areas. These areas must be cleaned up daily to remove all loose trash, paint cans, discarded construction materials, grit blast, paint chips, marine growth, oil, plastic and other potential pollutants.

The PIC should also understand that liquid flows on the dock floor surfaces should not come into contact with potential pollutants before it enters the bay or the sewer system. Oily waste water flows on the dock floor are prohibited unless approved by the Environmental Department.

Oil Containment Booms should be positioned around all ships that are under repair, all waste water barges, and other vessels with the potential for accidental discharges. The boom should be in working condition and continuous (i.e., without gaps). The boom should also be available for deployment in case of a spill into the Bay.

Please Read The Signs!

WARNING

DISPOSAL OF ANY FOREIGN MATERIAL (EXAMPLE: TRASH, METAL, OIL, SEWAGE, SOLVENTS) INTO FEDERAL WATER IS A VIOLATION OF FEDERAL AND STATE LAWS.

VIOLATORS ARE SUBJECT TO
FINE AND/OR IMPRISONMENT

**REPORT ALL SPILLS AND LEAKAGE TO SECURITY-
USE PROPER DISPOSAL CONTAINERS**

Major Causes of Oil Spills

Human Error Factor: Human factors that may lead to spills and an unsafe work environment include all human conditions which can lead to operator error or poor judgment. Inadequate knowledge or fatigue are the leading causes of oil spills. Therefore, this training program will address the competency and judgment of humans involved in the transfer process.

Operational Interferences: Indirect operations (i.e., operations that are not monitored in the area of the transfer operation) can result in unsafe conditions and spills. New construction, repairs, etc. that occur near oil-handling operations (i.e., operating equipment next to an active oil transfer pipeline), indirectly cause the risk of an oil spill.

Equipment Failure: Improper maintenance, preventative maintenance and repair of equipment used for the transfer, storage, handling, or bulk oil and hazardous materials can lead to accidents and spills. Equipment should be placed on a preventative maintenance program and equipment should be inspected prior to every transfer operation. Procedures for inspections should be in place and followed.

Poor Management: Unprepared, under-trained, and haphazard administration of transfer operations policies and procedures dramatically increases the risk of spill to marine waters. The Shipyard must ensure that PICs are properly trained and understand the importance of their operational procedures.

Poor Communication: Poor communication between the vessel PIC and the Facility PIC and the transfer personnel can result in procedures being neglected, a conflict of responsibility, and improper operational timing. Transfer PICs must have continuous communication with all individuals involved. The communication starts with the pre-transfer meetings and should remain constant to ensure everyone understands what has been accomplished and what needs to be completed. In addition, it is vital that emergency shutdown communications are in-place and foolproof.

Poor Planning

- No clear delegation of duties
- Too many duty distractions
- Lack of time dedicated exclusively to transfer
- No plan or standard operating procedure for the transfer
- Miscommunication or misunderstanding concerning which tanks are to be filled or emptied
- Unqualified or untrained personnel assigned to the task with little or no supervision
- Misjudgment of receiving tank capacity or supply tank liquid volume

Poor Transfer Execution

- Insufficient personnel
- Inadequate tank level gauging during transfer
- Insufficient supervision of the transfer by the PIC
- Valve misalignments
- Miscommunication between watch standers or watches and PICs
- Transfer rate underestimated or undetermined

Insufficient Human Resources: In many cases, spills are the result of requiring too much from too few transfer personnel. This can be the case when PICs are required to perform their responsibilities without sufficient support. If the resources are not available, the PICs must take their time to ensure that everything is accomplished correctly and safely. Never work under unrealistic time constraints as it will never be worth the risk of a spill incident.

Insufficient Response to An Incident: All spills do not become released to the environment. The objective of fast and effective spill response is to stop the spill flow on land and prevent the spilled fluid from reaching the water. This cannot be accomplished if the PICs do not have sufficient emergency shutdown procedures and secondary containment in place.

Fatigue Can Lead To Accidents: Sleep is a basic human need and lack of sleep leads to fatigue. Fatigue will lead to a degradation of performance for PICs. The consequences of fatigue tend to reveal themselves in accidents. Some of the more well-known cases of fatigue-related accidents in the maritime industry include the grounding of the tankers WORLD PRODIGY and EXXON VALDEZ. In Washington, fatigue was a factor in a number of significant bunker spills. **There are many misconceptions about fatigue and the need to sleep, among them:**

- "I know how tired I am." Wrong. Since fatigue impairs all mental functions (including perception) people consistently underestimate their level of fatigue.
- "I've been awake this long before with no problem." Wrong. The body's natural sleep rhythms are complex and subject to a variety of factors.
- "If I drink coffee I'll stay awake with no problem." Wrong. Caffeine's effect is transient (3 to 4 hours), and those who drink caffeinated beverages regularly get less of a stimulant effect over time. In addition, once the stimulant effects have worn off you may have a rebound effect and be even more fatigued.

Pollution Prevention Questions

1) What Potential Pollutants are Used at The Shipyard?

	Solids	Airborne
Oils, Waste Water	Blast Materials, Grease, Refuse/Trash, Liquid Containers, Solid Sludge	Volatile Organic Compounds (Blown General Trash, Etc.
Others?		Others?

2) How Can Potential Pollutants Be Transported To The Environment?

Leaks, Over-Spray, Etc.

Controlling Potential Pollutants by Implementing Procedures for: Minimizing Accidents, Proper Material Handling, Blocking Pollution Pathways, Awareness and Planning, Area Organization and

Person In Charge PIC Training On-The-Job Training (OJT) FORM

Participant Name: _____ Estimated OJT Hours: 1 hour

Session Date: _____ Instructor Name: _____

OJT Due Date: _____

Session 2.0 - OJT - Pollution Prevention Training For PICs

Training Tasks

1. Identify pollution sources (i.e. hazardous materials) in the area of the transfer operations.
2. Identify and examine all potential pollution pathways from the sources. The PIC should concentrate on Water Pollution Pathways.
3. Evaluate the risk levels associated with each potential pollutant source and its potential pathway and describe your findings (low, medium, and high).
4. Develop some suggestions for blocking the pollution pathways and minimizing the potential for pollution. (i.e. Pollution Prevention Practices, containment facilities, alarms, material removal, etc.)
5. Discuss your findings with your supervisor and determine if your ideas should be implemented or integrated into the transfer operations. Report the results of your discussion.

Provide results of the previous tasks in the space provided below and return this document to the instructor within the prescribed amount of time.

Ensure that you and your supervisor date and sign the OJT form before your return it to the instructor.

Task #1

Task #2

Task #3

Task #4

Task #5

Documentation

Date ____ PIC Name: _____ Badge # _____ PIC Signature

Date ____ PIC Supervisor Name _____ Supervisor Signature _____
Date ____ Instructor Name _____ Instructor Signature _____

Session 3.0 - The Shipyard Operations Manual

Once the shipyard determines that it intend to transfer oil or bulk hazardous materials over water, it must submit a Letter Of Intent (LOI) to the local US Coast Guard Captain Of The Port (COTP). The LOI sets in motion the development of the shipyard transfer Operations Manual and a PIC training program in compliance with Coast Guard Regulations. The shipyards' Operations Manual must be prepared and submitted as described in 33 CFR.

The Letter of Intent (LOI)

The shipyard must submit a Letter Of Intent (LOI) to transfer oil or hazardous material to and from floating vessels. This includes all transfers of hazardous materials in bulk quantities to and from all repair or new construction ships. The letter of intent should be submitted to the Captain Of The Port not less than 60 days before the intended operations.

The LOI should include:

- The name, address, and telephone number of the facility operator,
- The name, address, and telephone number of the facility, and
- The geographical location of the facility in relation to the navigable waters.

The LOI is generally accompanied by a shipyard specific Operations Manual that has been prepared by the shipyard. Once the COTP has reviewed and approved the shipyards' Operations Manual, a Letter of Adequacy is provided to the shipyard.

The Letter Of Adequacy

Upon completion of a full review of the Operations Manual, the COTP issues a letter of adequacy to the facility operator. The letter of adequacy certifies that the Operations Manual meets the requirements of the USCG regulations.

The Shipyards Operations Manual

The Operations Manual forms the basis of the shipyard compliance program. If the Operations Manual is developed properly and completely, it will serve as a resource document for all PIC personnel. The Operations Manual content must be understood by all designated PICs on-site. The following is a list of requirements for the shipyard Operations Manual:

- The manual must describe how the shipyard meets the operating rules and equipment requirements as specified in 33 CFR Parts 154 and 156. Also, the training requirements and the requirements of all PIC personnel are included.
- The manual will describe the responsibilities of personnel involved in transfer operations. It will also include procedures and practices associated with transfer operations.
- The manual will include names of all individual employees trained and designated as PICs.
- The manual must always be current and up-to-date. Changes should be made to the Operations Manual on an as-needed basis.
- The manual should include translations into a language or languages understood by all designated persons in charge of transfer operations.

- The facility operator shall maintain the Operations Manual so that it is current and readily available for examination by the COTP.

The COTP shall examine the Operations Manual when submitted, after any substantial amendment, and as otherwise required by the COTP.

Operations Manual Content

The outline of the Operations Manual is described in the Coast Guard regulations. This outline helps identify the information that is required in each section. Each Operations Manual is required to contain the following information and each PIC should understand the sections and their contents:

- The geographic location of the facility.
- A physical description of the facility including a plan and/or plans, maps, drawings, aerial photographs or diagrams, showing the boundaries of the facility subject to Coast Guard jurisdiction, mooring areas, transfer locations, control stations, wharves, the extent and scope of the piping subject to the tests required, and the locations of safety equipment.
- The hours of operation of the facility (especially hours of transfer operations).
- The sizes, types, and number of vessels that the facility can transfer oil or hazardous material to and from simultaneously.
- **For each product transferred, the facility must provide:**
 - Generic or chemical name; and the following cargo information:
 - The name of the cargo
 - A description of the appearance of the cargo
 - A description of the odor of the cargo
 - The hazards involved in handling the cargo
 - Instructions for safe handling of the cargo
- The procedures to be followed if the cargo spills or leaks, or if a person is exposed to the cargo, and a list of fire fighting procedures and extinguishing agents that would be effective in the event of a fire involving the cargo.
- The minimum number of persons on duty during transfer operations and their duties.
- The name, title/position and telephone number of the facility emergency contact; and/or the telephone number of the Coast Guard, state, local and other personal personnel who may be called by the PIC of the facility in an emergency.
- A complete system description, procedures for use, and the location of each emergency shutdown system associated with transfer operations.
- The quantity, types, locations, and instructions for use of:
 - 1) monitoring devices on facility and vessel transfer systems.
 - 2) time limits for gaining access to the containment equipment.
 - 3) fire extinguishers and other life saving equipment.

4) harbor booms and other spill response equipment.

The Operations Manual should also have procedures for the following items:

- Operation of all transfer equipment
- Communication systems operations and procedures
- Loading arm operation, including the limitations of each loading arm
- Procedures for the actual transferring of oil or hazardous material
- Procedures that identify completion of the pumping process
- Procedures for handling emergencies that can be associated with the transfer process

Remember, all PICs must know and understand all aspects of the Operations Manual, especially the operational procedures and the emergency response practices.

Advance Notice of Transfer

The COTP may require a shipyard to notify the COTP of the time and place of each transfer operation at least 4 hours before it begins. This is generally required for shipyards that:

- Are mobile (i.e. mobile facilities at the shipyard),
- Are in a remote location with slow spill response,
- Have a prior history of oil or hazardous material spills, and
- Conduct infrequent transfer operations.

In the case of a vessel to vessel transfer, the COTP may require a vessel operator of a lightering or fueling vessel to notify the COTP of the time and place of each transfer operation, as specified by the COTP, at least 4 hours before it begins.

Note: The notification may be accomplished by submitting a written schedule.

Facility Examinations

The facility operator shall allow the United States Coast Guard to make any examination, or perform any test to determine compliance with their Operations Manual and the requirements set forth in 33 CFR 154 and 156. The shipyard shall conduct all required inspection and testing of facility equipment in a manner acceptable to the Coast Guard.

After a shipyard examination, the COTP shall provide the shipyard with a written report of the results of the examination for the record, and shall list the deficiencies, in the report, when the shipyard is not in compliance with the requirements.

Session 4.0 - Shipyard Person In Charge Designation and Record Keeping

A shipyard Person in Charge (PIC) is an individual designated as responsible for transfer operations involving bulk oil and hazardous materials to and from ships and other vessels. There are a minimum of two PICs for every transfer, one for the vessel and one for the facility. The PICs have the highest amount of responsibility during transfer operations. All individuals who are involved in the transfer process are also referred to a PIC trained individuals but do not necessarily act as the PIC for transfer events. The PIC trained individuals may serve as transfer operational personnel or as the designated person in charge of an actual transfer.

PIC Requirements And Qualifications

No person may serve or be designated as a PIC unless the individual meets the following training, experience, and educational requirements:

- Has a minimum 48 hours of experience in shipyard bulk oil and hazardous materials transfer operations to and from ships, barges, and other vessels.
- Has completed a training and qualification program established by the shipyard operator as described in the shipyard Operations Manual.
- Possess enough experience and training at the shipyard for qualification. The facility management personnel are to determine that the experience is adequate for the individual to properly operate all associated transfer equipment.
- Trained to follow the procedures required to fulfill the duties of a PIC during an emergency spill, fire, or other unsafe conditions.
- Has demonstrated competence by passing all tests and on the job training assignments associated with the shipyard PIC training program.

The PIC must know, understand and have a working knowledge of the following subjects:

- The hazards associated with each of the materials being transferred.
- The applicable rules and regulations depicted in 33 CFR 156.
- The shipyard specific procedures described in the Operations Manual.
- All vessel and shipyard transfer systems and transfer control systems and procedures.
- Local spill incident and discharge reporting procedures.
- The contingency plan for discharge reporting and containment.

PIC Evidence of Designation

Each person in charge must carry evidence of his or her designation as a person in charge. This is generally in the form of an identification badge.

Transfer Operation Responsibilities

It is to know the respective roles and responsibilities of those involved in the transfer operation key to safe and effective transfer operations. The transfer operation requires a team approach that must be applied to the process. Complete communication and awareness is essential. The PIC must understand that they can serve duty on more than one vessel transfer operation at a time, but cannot serve on both the vessel transfer operation and the facility transfer operation at the same time.

PIC Required Record Keeping

The PIC must be aware of records that need to be kept at a shipyard engaged in oil and other bulk hazardous material transferring operations. Each PIC and operator of a shipyard must keep records at the facility and make these records available for examination by the COTP.

It is a requirement to keep the following records on hand for inspection by the COTP:

- A copy of the letter of intent with the Operations Manual.
- The name of each person currently designated as a person in charge (PIC) of transfer operations.
- The date and result of the most recent tests and/or physical examination of all hoses and connections.
- The record of all examinations of the facility by the COTP within the last three years.
- The Declaration of Inspection, which will be discussed in later detail , will need to be available for immediate and future examination by the COTP.

All records should be readily accessible by the department performing the transfer operation, the environmental department, and the PIC.

Session 5 - Required Equipment For Transfer Operations

The transfer of bulk oil and hazardous materials over water requires certain types of equipment for the transfer process, as well as emergency response operations. All of the required equipment should be placed on a preventative maintenance program and inspected before each use. The equipment requirements that are identified in the Coast Guard regulations, as well as some shipyard specific practices, are explained in this session.

Emergency Shutdown Equipment and Procedures

In an emergency (spill, fire, hose disconnect, tank overfill, etc.), the PIC must be able to stop the flow of oil or hazardous material quickly by shutting down the electrical, pneumatic, or mechanical pumps operating the system. The PIC can use an electronic voice communication system continuously operated by a person in the shipyard who can stop the flow in case of an emergency. The shut down point must be located near the dock manifold connection to minimize the loss in case of rupture or failure of the hose, loading arm, or manifold valve.

The required shutdown response time for spill response is a function of what year the shipyard first started performing transfer operations. At least shipyards must comply with the following response time requirements:

- 1) For oil transfers, the PIC must stop the flow within 60 seconds if the shipyard first transferred oil on or before November 1, 1980; or within 30 seconds if the shipyard first transferred oil after November 1, 1980.
- 2) For hazardous materials, the flow must be stopped within 60 seconds if the shipyard first transferred hazardous material before October 4, 1990; or within 30 seconds if the shipyard first transferred hazardous material on or after October 4, 1990.

Small Discharge Containment

The shipyard facility and vessel must have fixed catchments, curbing (berming), or other fixed means to contain oil or hazardous material discharged in the following locations:

- Each hose handling and loading arm area (that area on the facility that is within the area traversed by the free end of the hose or loading arm when moved from its normal stowed or idle position into a position for connection).
- Each hose connection manifold area.
- Under each hose connection that will be coupled or uncoupled as part of the transfer operation during coupling, uncoupling, and transfer.

The discharge containment equipment is required to have a capacity of at least:

- **Two barrels** if it serves one or more hoses of 6 inch inside diameter or smaller, or loading arms of 6 inch nominal pipe size diameter or smaller;
- **Three barrels** if it serves one or more hoses with an inside diameter of more than 6 inches, but less than 12 inches, or loading arms with a nominal pipe size diameter of more than 6 inches, but less than 12 inches; or
- **Four barrels** if it serves one or more hoses of 12 inch inside diameter or larger, or loading arms of 12 inch nominal pipe size diameter or larger.
- The shipyard may use portable means of not less than 1/2 barrel capacity each, if the COTP finds fixed means to contain the discharges are not feasible.

- A mobile facility such as a tank truck or tank car may have a portable means of not less than five gallon capacity for containment.

Containment Discharge Removal

Within one hour of completion of the transfer the shipyard must have the means and procedures in place to safely remove discharged oil or hazardous material from the containment without discharging the oil or hazardous material into the water.

Spill Containment Equipment

Shipyard PICs must have ready access to enough containment material and equipment to contain any oil or hazardous material discharged in the water from operations at that shipyard. Each shipyard must have ready access to enough containment material and equipment to clean-up and contain a major spill incident. Equipment generally includes oil booms and absorbent pads. For the purpose of this requirement, "access" may include direct ownership, joint ownership, cooperative venture, or contractual agreement. The shipyard must establish time limits, subject to approval by the COTP, for deployment of the containment material and equipment required considering:

- (1) Oil or hazardous material handling rates,
- (2) Oil or hazardous material capacity susceptible to being spilled,
- (3) Frequency of facility operations,
- (4) Tidal and current conditions,
- (5) Facility age and configuration, and
- (6) Past record of discharges.

The COTP may require a facility to surround each vessel conducting an oil or hazardous material transfer operation with containment material before commencing a transfer operation. This may be required when one or more of the following is of concern:

- The environmental sensitivity of the area requires the added protection,
- The products transferred at the facility pose a significant threat to the environment,
- The past record of discharges at the shipyard is poor,
- The size or complexity of the transfer operation poses a significant potential for a discharge of oil or hazardous material, and
- The use of vessel containment provides the only practical means to reduce the extent of environmental damage.

Communication System Equipment and Procedures

Each shipyard and vessel must have a means that enables continuous two-way voice communication between the PIC of the vessel transfer operation and the PIC of the oil transfer operation. It must be usable and effective in all phases of the transfer operation and all conditions of weather at the shipyard.

Portable radio devices used to comply with this requirement during the transfer of flammable or combustible liquids must be marked as intrinsically safe by the manufacturer of the device and certified as intrinsically safe by a national testing laboratory or another approved certification organization. As an alternative to the marking requirement, shipyard operators may maintain documentation at the shipyard certifying that the portable radio devices are in compliance with this section.

Lighting Equipment

During oil transfer operations that require lighting, portable or fixed lighting will be used to illuminate all transfer connection points. All lighting will have shielding to prevent any interference with navigational aids on land or water in the immediate area of the transfer operation.

The shipyard must have fixed lighting that adequately illuminates:

- (1) Each transfer connection point on the facility;
- (2) Each transfer connection point in use on any barge moored at the shipyard from which oil or hazardous material is being transferred;
- (3) Each transfer operations work area on the facility; and
- (4) Each transfer operations work area on any barge moored at the shipyard from which oil or hazardous material is being transferred.

Where the illumination is apparently inadequate, the COTP may require verification by instrument of the levels of illumination. On a horizontal plane, 3 feet above the barge deck or walking surface, illumination must measure at least 5.0 foot candles at transfer connection points, and 1.0 foot candle in transfer operations work areas.

For small or remote facilities, the COTP may authorize operations with an adequate level of illumination provided by the vessel or by portable means.

Hose Assembly Equipment

The condition and maintenance of hose assembly equipment is very important for the prevention of accidents. Many problems encountered during transfer operations can be the result of improper equipment, inconsistencies, or equipment failures.

Each hose assembly used for transferring oil or hazardous material must meet the following requirements:

- The minimum design burst pressure (MDBP) for each hose assembly must be at least four times the sum of the pressure of the relief valve setting (or four times the maximum pump pressure when no relief valve is installed), plus the static head pressure of the transfer system, at the point where the hose is installed. The hoses must meet the MDBP of 600 psi. The hose burst pressure and the pressure used for the test required must be recorded at the facility.
- The maximum allowable working pressure (MAWP) for each hose assembly must be more than the sum of the pressure of the relief valve setting (or the maximum pump pressure when no relief valve is installed) plus the static head pressure of the transfer system, at the point where the hose is installed. The MAWP for hoses in the shipyard must be at least 150 psi.
- Each non-metallic hose must be usable for oil or hazardous material service.

Each hose assembly must either have:

- Full threaded connections;
- Flanges that meet standards for *Steel Pipe Flanges and Flange Fittings* and/or standards for *Brass or Bronze Pipe Flanges*, of the American National Standards Institute (ANSI);
- Quick-disconnect couplings that meet ASTM F-1 122; and/or
- An automatic back pressure shutoff nozzle must be on each hose used for transferring fuel to a vessel that has a fill pipe for which containment cannot practically be provided.

Hose Assembly Marking

Each hose must be marked with one of the following:

- The name of each product for which the hose may be used;
- For oil products, the words "OIL SERVICE";
- For hazardous materials, the words "HAZMAT SERVICE-SEE LIST" followed immediately by a letter, number or other symbol that corresponds to a list or chart contained in the shipyard's operations manual or the vessel's transfer procedure documents, which identifies the products that may be transferred through a hose bearing that symbol.
- Each hose also must be marked with the following:
 - Maximum allowable working pressure (MAWP),
 - Date of manufacture, and
 - Date of the latest test.

Hose Connections

Hose connections can cause many problems if they are not operated correctly or if they are the wrong type of equipment. As a practice, all transfer personnel who make a connection for transfer operations shall:

- Use suitable material in joints and couplings to ensure a leak-free seal.
- Use a bolt in at least every other hole, and in no case less than four bolts, in each temporary bolted connection that uses a flange that meets American National Standards Institute (ANSI) standard flange requirements.
- Use a bolt in each hole for each temporary bolted connection that uses a flange other than one that meets ANSI standards.
- Use a bolt in each hole of each permanently connected flange.
- Use bolts of the correct size in each bolted connection.
- Tighten each bolt uniformly to distribute the load and to sufficiently ensure a leak free seal.

A person who makes a connection for transfer operations must not use any bolt that shows signs of strain or is elongated or deteriorated. Also, no person may transfer oil or hazardous material to a vessel that has a fill pipe for which containment cannot practically be provided unless an automatic back pressure shutoff nozzle is used.

Closure Devices and Equipment

Each shipyard must have enough butterfly valves, wafer-type resilient seated valves, blank flanges, or other means acceptable to the COTP, to blank off the ends of each hose or loading arm that is not connected for the transfer of oil or hazardous material. Such hoses and/or loading arms must be blanked off during the transfer of oil or hazardous material. A suitable material in the joints and couplings shall be installed on each end of the hose assembly or loading arm not being used for transfer to ensure a leak-free seal.

Note: New and/or unused hose is exempt from this requirement if it is not connected to the facility, to the vessels, or any section of the pumping system.

Monitoring Equipment

The COTP may require the shipyard to install monitoring devices if they would significantly limit the size of a discharge of oil or hazardous material and either:

- The environmental sensitivity of the area requires added protection.
- The products being transferred pose a significant threat to the environment.
- The size and/or complexity of the operation poses a significant potential for a discharge to state waters.

Loading Arms and Associated Equipment

Each mechanical loading arm used for transferring oil or hazardous material and placed into service after June 30, 1973, must meet the design, fabrication, material, inspection, and testing requirements in ANSI B31.3. The equipment must have the manufacturer's certification permanently marked on the loading arm or recorded elsewhere at the shipyard with the loading arm marked to identify it with that information. Each mechanical loading arm must also have a means of being drained or closed before being disconnected, after transfer operations are completed.

Person In Charge PIC Training On-The-Job Training (OJT) FORM

Participant Name: _____ Estimated OJT Hours: 1 hour

Session Date: _____ Instructor Name: _____

OJT Due Date: _____

Session 5.0 - OJT - Required Equipment For Transfer Operations

Training Tasks

1. Identify the equipment necessary to perform the transfer process (i.e. pumps, hoses, connections, radios etc.).
2. Examine all of the equipment for overall condition and maintenance. Report your findings and suggestions.
3. Check to ensure that all equipment meets the specifications as identified in the Operations Manual (i.e. hose marking and log, loading arm specification, etc.).
4. Identify and list all emergency response equipment and list all process related secondary containment equipment and structures.
5. Discuss your findings with your supervisor and determine if any ideas that you may have developed should be implemented or integrated into the transfer operations. Report the results of your discussion.

Provide results of the previous tasks in the space provided below and return this document to the instructor within the prescribed amount of time.

Ensure that you and your supervisor date and sign the OJT form before you return it to the instructor.

Task #1

Task #2

Task #3

Task #4

Task #5

Documentation

Date PIC Name: _____ Badge # PIC Signature _____

Date PIC Supervisor Name _____ Supervisor Signature _____

Date Instructor Name _____ Instructor Signature _____

Section 6.0 - Safety Concerns For PICs

Shipyard management and PICs must ensure that operations are conducted in a safe and effective manner. Safe transfer operations will ensure employee safety as well as environmental protection. Everybody involved in the transfer process and nearby operations have a responsibility to maintain a safe work environment.

Accidents and environmental incidents can happen very rapidly during transfer operations. The best way to deal with potentially unsafe conditions is to prevent the condition from occurring in the first place. Prevention of unsafe conditions goes hand-in-hand with prevention of pollution. The PICs must understand their responsibility to maintain a safe environment and ensure that potential for accidents is minimized. This training session describes conditions and procedures that must be followed in order to help maintain safe transfer operations.

Safety and Emergency Equipment

The condition of safety and emergency equipment, its availability, and the ability to use the equipment properly is very important to the PIC. Initial response equipment can prevent an emergency situation from getting out of hand. A quick and concise response to an incident can save lives and protect the environment. PICs should use the following as a guideline for evaluating their initial response capabilities:

- Response equipment in the transfer area must be adequate to serve as a stop gap measure to minimize the spread of all potential spills, and provide containment and some clean-up until further response actions are taken.
- PIC personnel should be familiar with and have proper training to use all response equipment located in the transfer areas.
- Each piece of personal protective equipment (PPE), and response equipment must be ready to operate in the event of an accident. The equipment should be inspected frequently to ensure that it is in operational condition.
- A sufficient number of fire extinguishers must be available in the immediate area of the transfer operation, on the vessel, and near the facility operations. All PIC personnel should be trained in the proper operation of fire extinguishers in case of a fire. PICs must also be made aware of the dangers associated with extinguisher fire-fighting and must understand that their safety and the safety of fellow employees is the major priority.

Hazardous and Flammable Materials

Hazardous and flammable materials pose significant threats to the safety of shipyard PICs. Hazardous materials are used throughout the shipyard on piers and on-board vessels. The PICs must become accustomed to seeing the material and must understand the dangers associated with their presence. The best way to minimize the potential for accidents is to use the following guidelines with respect to hazardous materials:

- Hazardous material stored in the areas around the transfer process should be inspected to ensure proper storage. The materials should be removed from the area, or stored in such a manner so as to have no impact if an accident were to occur.

- All hazardous materials shall be stored in compliance with applicable Federal, State, and Local environmental regulations. Storage compartments in the area of the transfer should contain only quantities of materials as needed for the operation or maintenance of the process.
- Gasoline or other fuel should not be stored on the pier, wharf, or other similar structure during transfer operations. This can be an extreme spill and fire hazard, especially during transfer operations.

Potentially Dangerous Ignition Sources

Ignition sources are very dangerous when transferring fuel or other flammable materials. The PIC must control ignition sources in the transfer area. PICs use the following rules to help maintain control of ignition sources:

- Ensure that all equipment with internal combustion engines do not constitute a fire hazard and are near fire extinguishers. Park or operate trucks and other motor vehicles only in designated locations to minimize the likelihood of sparks that could cause a fire.
- Provide spark arresters on chimneys or appliances that use solid fuel or are located near combustible materials. This equipment can include boilers in the area of the transfer operation. The PIC should be very aware of the fire risks posed by equipment in the transfer area.
- Keep all heating equipment on the vessel or at the facility at a sufficient distance from the transfer operation to eliminate the risk of fire. The equipment should be removed from service during the transfer operation in order to eliminate the potential fire hazard.
- Do not use open fires or open flame lamps for any operations near the transfer area or other potentially hazardous area.
- Ensure that the electric wiring and equipment in the area of the transfer are in a safe condition to prevent fires. Ensure that electrical wiring and equipment installed after October 4, 1990 meet the requirements of NFPA 70.
- Ensure that equipment with internal combustion engines are not refueled on piers, wharves, or other similar structures in the shipyard.

Hot Work Around The Transfer Area

All welding, or hot work, conducted on or at the facility is the responsibility of the facility operator/shipyard management. However, when the hot work occurs near a transfer operation, the PIC should be made aware of the situation. The PIC should understand the following:

- The COTP may require that the PIC at the shipyard notify the COTP before any welding or hot work operations are conducted near a transfer process. Any welding or hot work operations conducted on or at the facility must be conducted in accordance with NFPA 51B.
- Welding or hot work is prohibited during gas freeing operations within 30.5 meters (100 feet) of bulk cargo operations involving flammable or combustible materials, within 30.5 meters (100 feet) of fueling operations, or within 30.5 meters (100 feet) of explosives or 15.25 meters (50 feet) of other hazardous materials.

- PIC should ensure that hot work is conducted only if it is vital to the process. If the welding or hot work is necessary and on the boundary of a compartment (i.e., bulkhead, wall or deck), additional fire watch personnel shall be stationed in the adjoining compartments.
- Personnel on fire watch shall have no other duties except to watch for the presence of fire or spills and to prevent or minimize the development of hazardous conditions.

Tank Cleaning and Gas Freeing

Flammable vapors, liquids or solids must first be completely removed from any container, pipe or transfer line subject to welding or hot work. This is usually required prior to entry by PIC personnel without supplied air respirators. The PIC must have a basic understanding of the following subject matters:

- Tanks used for storage of flammable or combustible substances must be tested and certified gas free prior to starting hot work. The PIC must ensure that the hot work will not interfere with the transfer operation if an accident should occur. For example, if an overflow were to occur, it should not enter the compartment where the welding is taking place.
- Proper safety precautions in relation to purging, inserting, or venting shall be followed for hot work on tanks and other containers. These procedures should be followed by all involved. The PIC must help ensure that the operations will not effect the transfer operation.
- Tank cleaning or gas freeing operations conducted by the facility on vessels carrying oil residues or mixtures shall be conducted in accordance with the International Safety Guide for Oil Tankers and Terminals (ISGOTT).

Warning Signs and Markings

Signs are an excellent method to communicate with shipyard workers who may not be aware of the transfer operation. Signs and symbols used by the PIC should be visible and comprehensible by shipyard employees. At a minimum, the PIC should perform the following:

- Post signs indicating "No Smoking" where smoking is not permitted around the transfer area. This is very important especially if the liquid being transferred is very flammable.
- Conspicuously mark the location of each fire hydrant, hose station, fire extinguisher and fire alarm box. This may also be done by on-site fire personnel.
- Display warning signs on the facility, at each shoreside entry to the dock or berth at all times during coupling, transfer operation, and uncoupling operations.
- Rope off transfer areas when shipyard employee foot traffic is imminent.

Organization Increases Safety and Performance

One of the best methods for reducing the risk for accidents and increasing safety of shipyard employees is to stay organized, follow procedures, and keep constant communication with involved parties. Organization is used to help PICs perform their function and maintain a level of control. PICs can use the following suggestions to guide their work activities:

- Keep all rubbish and extra parts, pieces, and piping organized and in receptacles to increase organization and decrease the likelihood for accidents.
- Establish good organizational practices with respect to hose storage, pump storage and maintenance, and area cleanliness. Transfer equipment organization before, during, and after transfer operations is very important for reducing the risk of spills, accidents, fires and other types of emergencies.
- Remember that an unorganized area or operation is dangerous for employee safety and environmental pollution.

Proper Personal Protective Equipment (PPE)

It is always a good idea to be prepared for the worst, especially when it comes to wearing PPE in the shipyard environment and working with hazardous materials. All PICs involved in the marine transfer operation are required to wear the following PPE as needed:

- Safety Glasses or Splash Goggles
- Hard Hat
- Gloves
- Life Jackets (on barges and other activities dangerously close to the waters' edge)
- Protective Coveralls
- Respirators (if required)

Facility and Vessel Access and Control

A key element of control is security clearance and the ability for rapid response. The transfer area should be secure to prevent mistakes made by individuals who are not involved. Also, the area should provide immediate access to emergency response personnel. The PIC should understand the following:

- The shipyard must provide for unimpeded access to the transfer facility by local fire fighting personnel, fire trucks, USCG, or other emergency personnel should an incident occur. PICs are to provide information and assistance to all emergency response personnel.
- Guards should be stationed to prevent unlawful access, detect and recognize fires, and report emergency situations at the facility. Everyone in the immediate area of the transfer should be trained in emergency incident reporting.

Person In Charge PIC Training On-The-Job Training (OJT) FORM

Participant Name: _____ Estimated OJT Hours: 1 hour

Session Date: _____ Instructor Name: _____

OJT Due Date: _____

Session 6.0 - OJT - Safety Concerns For PICs

Training Tasks

1. Identify and list the safety concerns for transfer operations personnel. List the safety concerns in order of most severe to least severe.
2. Examine all of the fire fighting equipment for overall condition and maintenance. Report your findings and suggestions.
3. Locate any ignition sources in the vicinity of the transfer process. This may require more than a simple view from the pier.
4. Identify any potential operational interferences around the transfer area (i.e. hot work nearby, major construction work, crane movements, etc.). Develop and list some ideas with respect to minimizing operational interferences.
5. Discuss your findings with your supervisor and determine if your ideas should be implemented or integrated into the transfer operations. Report the results of your discussion.

Provide results of the previous tasks in the space provided below and return this document to the instructor within the prescribed amount of time.

Ensure that you and your supervisor date and sign the OJT form before you return it to the instructor.

Task #1

Task #2

Task #3

Task #4

Task #5

Documentation

Date PIC Name: _____ Badge # PIC Signature _____

Date PIC Supervisor Name _____ Supervisor Signature _____

Date Instructor Name _____ Instructor Signature _____

Session 7.0 - Transfer Operation And Procedures

The objective of this session is to understand proper procedures and practices for transferring oil or hazardous materials to and from vessels. It is important to understand that the PIC may not transfer oil or hazardous materials unless several conditions are met. PICs must follow the procedures and practices to ensure compliance and minimize the likelihood for spills and other related accidents.

Duties Of The PIC and Other Transfer Personnel

The number of personnel involved in the transfer operation will vary from one operation to another. The minimum number of transfer personnel is two (2), which would include the vessel PIC and the PIC responsible for the facility or other vessel. At this minimum manning level, both individual PICs would coordinate and supervise all activities involved with the transfer operation. However, most transfer operations require more personnel. Transfer operations requiring more personnel include situations involving:

- More complex transfer systems and equipment,
- Large process areas where tank overflows are away from the main transfer point,
- Spill containments that are limited and a very rapid response is paramount,
- High potential for pollution and the transfer is considered risky, and
- Transfers from vessel to vessel that can be very complicated.

Many other situations will occur that need the attention of several transfer operation personnel. The individual positions can include a Point of Transfer Watch, a Deck Rover Watch, and a Tank Fill Monitor as described below:

- The Point-of-Transfer Watch is usually positioned at the transfer header on the facility and at the vessel. This person is given the task of monitoring the transfer area at the bulkhead. Also, the Point of Transfer Watch will frequently calculate and communicate soundings of tanks being filled.
- The Deck-Rover Watch is the individual who is assigned to roam about the deck to monitor and view for oil spills on the deck and over the side during transfer operations. The Deck Rover watch may also conduct routine ship duties on deck while checking for oil spills. The Deck Rover should always be in a position to view potential spillage on the deck or into the water. The PIC must inform the Deck Rover when topping off or changing tanks so that they may monitor the deck and water adjacent to the ship for spills.
- The Tank-Fill Monitor constantly communicates the level of the tank to the PIC. Since a large amount of spills are the result of overflow, assigning a Tank-Fill Monitor is an excellent method to ensure tank overfill does not occur.

Note: All individuals who perform transfer operations must be trained in the shipyard PIC training program before performing transfers.

Vessel and Facility PIC Responsibility

The PIC for the vessel and the facility are in charge of the transfer process and their respective watch personnel. The PICs are responsible for proper operation of the entire process. The PICs must ensure that each watch person is equipped with two-way communication. Watch personnel

involved in transfer operations should also be able to communicate to the delivering vessel using hand signals. PICs have several responsibilities including the following:

- Maintain two-way communication with delivering vessel and facility PICs
- Maintain two-way communication with all transfer personnel and their PIC
- Always notify delivering vessel or facility before changing tanks and topping off
- Ensure transfer personnel perform duties, as required
- Ensure that no team member exceeds work hour restrictions

Work Hours Limited For Transfer Personnel: To avoid problems caused by fatigue, transfer personnel involved should not work more than 15 hours in any 24 hour period, or more than 36 hours in any 72 hour period except in an emergency or spill response operation. Shipyards should monitor records of hours worked by transfer personnel to ensure compliance.

PIC Organization and Control

The key to a safe transfer process is organization, process control and following well designed procedures. The shipyard procedures should emphasize planning, communication and consistency. One of the best ways to maintain organization is to implement a process that includes a Pre-Loading Plan, Pre-Transfer Conference and Start-Up Criteria. The following sections explain this process in more detail:

Pre-Loading Plan

Prior to transferring bulk oil or hazardous materials, a Pre-Loading Plan should be completed by the vessel and facility PICs. The pre-loading plan should be posted on the receiving point and the point of transfer. The Plan must be retained with the Declaration of Inspection (DOI) for a minimum of 30 days, and should include:

- Identification, location, and capacity of the receiving tanks
- Level and type of liquid in each tank at the scheduled time of transfer
- Final transfer quantity and percent of each tank to be filled
- Liquid transfer rates for the operation
- Sequence in which tanks are to be filled
- Procedure to regularly monitor all tank levels and valve alignments
- Translation of procedures to a language common to all transfer personnel and posted at transfer points
- The name or title and location of each person participating in the transfer
- The details of the transferring and receiving system
- All critical stages of the transfer

Pre-Transfer Conference

The Pre-Transfer Conference must take place onboard the receiving or delivering vessel or at the facility. It must be in person between the facility PIC, the vessel PIC and other personnel, as deemed necessary. The conference must take place before all transfer operations, and should cover the following:

- The Pre-Loading Plan
- A review of each item on the Declaration of Inspection (DOI)
- The Point of Transfer Watch and Deck Rover Watch requirements and location

- A discussion of the emergency shutdown procedures and the topping off process
- Communication with the delivering vessel or facility
- Alternate communication methods, including hand signals and telephone lines
- Emergency shutdown procedures, including emergency shutdown signals
- Records to be kept of the transfer and the date and time of Pre-Transfer Conference

Start-Up Criteria and The Declaration Of Inspection (DOI)

The specific procedure for starting the transfer process may vary from system to system. Transfer Operations shall not begin unless the following criteria are met:

- PIC personnel have been trained properly and have the required experience and designation
- All the conditions of the Pre-Transfer Conference are met
- All the conditions of the Declaration of Inspection (DOI) are met
- Visual, voice, or radio contact are continually maintained by the delivering and receiving personnel
- Transfer personnel are in place and all visual safety checks have been made

Note: The Declaration of Inspection (DOI) is the main document to establish a start-up criteria. The DOI will be discussed in much greater detail in a following section.

Transfer Hose System Procedures

The hose components of the transfer system are among the most important elements of the transfer equipment. The hoses and associated connections are very high risks areas that need special attention by the PIC. The following items that concern transfer system hose control must be addressed by the PIC:

- When hoses will be laid from the facility to a vessel, each hose should be checked for proper gaskets and working couplings. After inspection of hoses, all camlock arms will be secured in locking position by checking pins at connection points at the vessel and the facility.
- All hose assemblies will be inspected prior to the transfer operation to ensure they meet the following 33 CFR 154.5 regulations:
 1. The *minimum design burst pressure* for each hose must be 600 pounds per square inch and/or at least four times the maximum pump system pressure (without a relief valve), plus the static head pressure at the point where the hose is installed.
 2. The *maximum allowable working pressure* for each hose will be 150 pounds per square inch and more than the maximum pump pressure when no valve relief valve is installed plus the static head pressure at the point the hose is installed.
 3. All transfer hoses must be suitable for oil or hazardous material service at the shipyard.
 4. All hose assembly must have full threaded connections, flanges that meet standard B 16.5 for steel or B 16.24 for brass or bronze flanges of the American National Standards Institute (ANSI); or quick-connect coupling that meet ASTM F- 1 122.
 5. All transfer hoses will be marked with maximum allowable working pressure and last date tested.
- A hose assembly log will be maintained by the department that is responsible for testing the hoses. This log will list the date of manufacture for each hose assembly, the date of annual testing for maximum allowable working pressure, and the physical condition of the complete hose assembly during the inspection of the hose.

- All hose connections will have a fixed connection (manifold, valves, etc.) during transfer operation. No hoses will be allowed to connect to any tank without a fixed connection point on the tank. For example, hoses will not be laid into open top tanks without a connection point on the tank. It is a good idea to have an automatic back pressure shut off nozzle to be used when a vessel is receiving fuel.
- All hoses will be positioned and supported to prevent kinking or other damage. Loose hoses that are not fastened properly will cause undue strain on its couplings and increase the potential for breakage and spills.

Spill Prevention Inspections

The PIC and transfer personnel should survey the area where a spill may result due to system or procedural failure. During the survey, the PIC and designated personnel should perform the following:

- ◊ Prior to any transfer operations, ensure that each drain and scupper that leads to state waters be closed by mechanical means. Wooden or other plugs may be used providing that cement is applied uniformly around the plug. No rags or other permeable material should be used to plug scuppers or drain pipes.
- ◊ Require that all transfer system hoses that are not used for the transfer operation be securely blanked (capped), shut off and stored in an organized manner. The PIC must ensure that the end of each hose and loading arm which is not connected for the transfer are blanked using the proper closure devices.
- ◊ Inspect to ensure that each transfer hose is in good operating condition with no loose covers, kinks, bulges, soft spots, or any other defects.
- ◊ Investigate and ensure that each overboard discharge or sea suction valve is sealed or lashed in the closed position in order to prevent potential spills.

Note: It is a good idea to slowly operate the pump and inspect all connections before increasing pumping rate to full. If any leakage is discovered after checking hoses and couplings, the pumps should immediately be shut down.

Vessel Stability Procedure

Vessel stability is an important issue that may be overlooked by PICs. The vessel stability is usually the responsibility of the site Dockmaster. Therefore, it is a good idea to communicate with those responsible prior to transfer. The following are some concerns that the PIC must understand about vessel stability:

- The vessels moorings must be strong enough to hold during all expected conditions of surge, current, and weather.
- Transfer hoses and loading arms must be long enough to allow the vessel to move to the limits of its mooring without placing strain on the hose, loading arm, or transfer piping system.

PIC Communication for Operations and Emergency Response

Communication by portable radio is the primary means of continuous two-way voice communication between PIC personnel and all other personnel. Reliable communication, promptly utilized, is a primary means of spill prevention and of spill control, should that occur. This section describes the means available to communicate during fuel transfer operation and emergencies.

Primary Means: Communication by portable radio is the primary method used during transfer operations. All PIC personnel are authorized to use these units. The facility and vessel PICs must have a radio equipped with a channel that communicates directly with on-site security or other individuals who have immediate access to trigger outside emergency response. Battery packs and chargers for these radios will be located in the transfer area on the vessel and at the facility.

Secondary Means: An alternate means is the red "hot line" portable telephone which will be located on the vessel near the transfer point, the gangway to the vessel, and the wastewater treatment facility. Company phones located within the yard may be used to notify emergency crews should an environmental incident occur.

Other Methods: Hand signals are used by all transfer personnel, when appropriate, and when other forms of communication are unsatisfactory, or inoperable.

Declaration Of Inspection

The DOI is the most important document for the PIC to understand and use. The DOI will be completed by both the facility and vessel PIC prior to all transfer operations. It is simply a checklist that must be completed and signed prior to the transfer. This checklist is very comprehensive and should be discussed at the Pre-Transfer Conference.

During the inspection of the transfer system, items may be identified that prevent the DOI from being completed. In this case, no transfer operations will occur until the items are corrected. Corrections are usually made through actions identified at the Pre-Transfer Conference.

If any transfer occurs over an eight hour shift, the new PICs will complete a new DOI prior to the start of the next shift. The DOI will be given to the ships' manager and placed in a file that will be kept on the vessel for three years.

No PIC may sign the DOI unless he or she has determined by inspection (indicated by initialing in the appropriate space on the DOI form), that all pre-transfer preparation is satisfactory. The Declaration of Inspection must contain at least the following information:

- i. The name or other identification of the transferring vessel or facility, and the receiving vessel or facility.
- ii. The address of the facility or location of the transfer operation, if not at the facility.
- iii. The date the transfer operation is started.
- iv. A list of the pre-transfer preparation, with spaces on the form for initialing.
- v. A space for the date, time of signing, signature, and title of each PIC on the transferring vessel or facility, and the receiving facility or vessel.

See the Declaration Of Inspection (DOI) Form At The End of This Session!

Internal Oil Transfers

Shipyards are also involved with internal transfers, which are the movement of liquid cargo, fuels, lubricants, slops, dirty ballast, oily bilge water, or hydraulic fluids from one tank to another within the hull of the ship. Internal transfers most frequently involve petroleum products. These transfers include movements from cargo tank to cargo tank, flushing tank to cargo tank, fuel tank to fuel tank, bilge to holding tank and many other configurations.

Common Problems: Internal transfers are often done routinely as an on-watch function, and therefore may not be given the same level of care and attention as transfers of petroleum cargo or bunkers over the rail of the ship. Too frequently this results in a tank overflow and/or discharges to the water. The following are problems that typically lead to accidents during an internal transfer.

Planning:

- No clear delegation of duties and no PIC has been appointed
- Too many duty distractions for involved personnel
- Lack of time dedicated exclusively to the transfer
- No plan or standard operating procedure for the internal transfer
- Miscommunication or misunderstanding about which tanks are to be filled or emptied
- Unqualified or untrained personnel assigned to the task, with little or no supervision
- Misjudgment of receiving tank capacity or supply tank liquid volume

Execution:

- Insufficient personnel for pre-inspection and transfer watch functions
- Inadequate tank level gauging during transfer
- Insufficient supervision of transfer by the PIC
- Valve misalignment and confusion
- Miscommunication between watch standers and the PIC
- Transfer rate underestimated or undetermined

Precautions: The best general precaution against internal transfer spills is to treat them with the same level of care and respect that is given to other over-the-rail liquid cargo or bunker fuel transfers. It is a good idea to create a checklist for and associated procedure as described below:

Transfer plan completed by PIC (PIC)		
Dedicated transfer team selected for the transfer operation (should all be PIC trained)		
Qualified crew assigned transfer duties, including deck and rover watch		
Piping diagrams and checklists posted and provided as needed		
Procedures for watch duties, transfer operations and emergency shutdown discussed		
Valve and vent systems aligned and checked by PIC		
Emergency shutdown and response procedures discussed		
Transfer, communication, and level alarm systems tested		
Tank levels checked, re-checked, and recorded		
Pollution prevention equipment in place (scupper plugs, berms, etc.)		
Other nearby departments and operations notified of transfer		
Changes to tank and valve alignment verified and approved by PIC		
Transfer started at low flow rate and raised after inspection		
Flow rates, pressures, and tank levels monitored and checked against plan		
Periodic communication checks are made between all transfer personnel		
Flow rate slowed when topping off tank(s)		
Levels compared with transfer plan.		

Person In Charge PIC Training On-The-Job Training (OJT) FORM

Participant Name: _____ Estimated OJT Hours: 1 hour

Session Date: _____ Instructor Name: _____

OJT Due Date: _____

Session 7.0 - OJT - Transfer Operation And Procedures

Training Tasks

1. Examine a transfer operation and identify the pre-transfer process. Report your observations about the Pre-Transfer Plan and the Pre-Transfer Process.
2. Record the amount of people involved in the Pre-Transfer Conference and identify all transfer personnel assigned, their title, and their role in the transfer process. Be sure and account for personnel from the vessel and facility.
3. Perform a vessel or facility inspection with either or both of the PICs and report your experience.
4. Go through the Declaration of Inspection (DOI) with both PICs to ensure understanding. Note any suggestions or ideas that you may have about the DOI or any element of the transfer process.
5. Discuss all findings with your supervisor and determine if your ideas should be implemented or integrated into the transfer operations. Report the results of your discussion.

Provide results of the previous tasks in the space provided below and return this document to the instructor within the prescribed amount of time.

Ensure that you and your supervisor date and sign the OJT form before your return it to the instructor.

Task #1

Task #2

Task #3

Task #4

Task #5

Documentation

Date PIC Name: _____ Badge # PIC Signature _____

Date PIC Supervisor Name _____ Supervisor Signature _____

Date Instructor Name _____ Instructor Signature _____

Declaration Of Inspection (DOI) Form

**The Vessel PIC and The Facility PIC Must Complete This Form
Prior To All Bulk Transfers**

Name of Vessel: _____ Location of Ship: _____ Date: _____

Oil Transfer is not to begin until all questions have been answered, all boxes initialed by PICs, and all of the appropriate signatures are on this form.

	Yes/No	VPIC	FPCI
Pre-Loading Plan Check:			
Has a Pre-Loading Plan been prepared and is there a clear understanding of the plan by facility and vessel transfer personnel?			
Have all tanks been properly identified (locations, filling sequences, capacities, connections, etc.)?			
Has the level, and type of material in each tank been described and understood?			
Has the planned final quantity, flow rates, and final planned percent of the tank been established?			
Has an operation watch and all shift arrangements been identified?			
Will the PICs receive sounding reports throughout the transfer?			
Pre-Transfer Conference:			
Have both PICs met and conducted a Pre-Transfer Conference?			
Have any problems with the DOI been rectified in the conference?			
Have procedures for topping off been established?			
Have emergency shutdown procedures for each transfer point been established and discussed?			
Pre-Transfer Check			
Is there a clear understanding of the steps to be taken for response, reporting, containment and clean-up in the event of an oil spill?			
Are all warning signals displayed as required?			
Is the discharge containment equipment readily accessible or deployed?			
Is the emergency means of shutdown in position and operable?			
If smoking is permitted, have spaces been designed for this purpose?			
Are vessel moorings strong enough to hold during all expected conditions of surge, current and weather and long enough for tide changes?			
Are transfer hoses long enough to allow the vessel to move without strain on the hose(s)?			
Is the system attached to fixed connections on the vessel and at the facility?			
Are all discharge containments in place and periodically drained to provide required capacity?			
Are all connections in the transfer system leak free (except components which may leak due to packing glands of a pump) and not exceeding capacity of discharge containment?			
Is required lighting between sunset & sunrise provided for the transfer operation?			
Are all lock out/tag out procedures being followed on above ground storage tanks used in transfer operations?			

Declaration Of Inspection (DOI) Form

Physical Inspections:				
Are all deck scuppers effectively plugged and drains closed?				
Are cargo/bunker hoses in good condition?				
Are hose records available for inspection?				
Are hoses properly supported and flanges properly bolted?				
Are pipeline valves fully opened and ready to transfer cargo at the facility and vessel?				
Are used cargo/bunker connections blanked?				
Are sea section and overboard discharge valves closed and lashed?				
Will there be a regular inspection of the transfer area and the water area around the vessel to discover oil leaks or seepage?				
If it is necessary to open sea suction valves, will this operation be supervised by the officer in charge?				
Equipment Check:				
Are communications working properly?				
Are monitoring devices (if any), operable and installed?				
Are sufficient suitable pans provided at cargo headers to contain oil drips?				
Will there be sufficient personnel at all times to properly control safe discharges or loading of cargo, tend cargo hoses and mooring lines?				
Does each hose or loading arm meet hose assembly and loading arm requirements?				
Personnel Check:				
Do the Transfer PIC and personnel meet all qualification requirements?				
Do the Vessel PIC and personnel meet all qualification requirements?				
Have Point of Transfer watches been designated?				
Have Deck Rover watches been assigned?				
Have terminal/vessel transfer procedures been made available to TPIC/VPIC?				
Will the transfer be conducted in accordance with terminal/vessel transfer procedures?				
Is there at least one person at the site of the transfer who fluently speaks the language or languages spoken by both PICs?				
Are the name, title and location of each person participating in the transfer operation documented at the end of this form?				
Do all transfer personnel understand hand signals for standby, slowdown and stop transfer?				
Will there be a facility representative on duty, at all times, to control oil transfer, make inspections, tend hoses, and take appropriate action in emergency?				
Are both facility and vessel personnel fully aware of the penalties imposed by federal and state regulations of those responsible for willful or negligent oil pollution of the harbor and coastal waters?				
Emergency Response Requirements:				
Is fire fighting equipment ready and properly placed?				
Has a Contingency Plan, which requires proper notification in the event of an oil spill, been developed?				
Are transfer shutdown procedures in place and operational?				
Will the tank vessel be able to move under its own power within 30 minutes?				

Declaration Of Inspection (DOI) Form

Are tugs available to move the vessel within 30 minutes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are emergency towing wires rigged and maintained less than 5 feet above waterline?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all vessel superstructure openings closed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all flame screens in the area checked, fitted and in good condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any unauthorized craft alongside?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Will entry to pump-rooms, bilges & ventilation precautions be observed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Will the TPIC & VPIC agree when the transfer will begin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Signatures:

By signing below, I (Vessel PIC and Facility PIC) am certifying that I have reviewed and addressed all items on this DOI and that the transfer operations are ready to commence.

Vessel PIC Name: _____ Signature: _____ Date: _____

Facility PIC Name: _____ Signature: _____ Date: _____

Please Indicate All Transfer Operation Personnel That Will Be Participating In the Transfer:**Vessel Transfer Personnel:**

Name: _____

Badge #: _____

Position and Responsibilities: _____

Name: _____

Badge #: _____

Position and Responsibilities: _____

Name: _____

Badge #: _____

Position and Responsibilities: _____

Facility Transfer Personnel:

Name: _____

Badge #: _____

Position and Responsibilities: _____

Name: _____

Badge #: _____

Position and Responsibilities: _____

Name: _____

Badge #: _____

Position and Responsibilities: _____

Session 8.0 - PIC Spill Response Operations

PICs must be very aware of spill response procedures. Spill response procedures and practices will vary depending on the severity of the situation and the resources available. In many cases, the most important response is internal notification and emergency shutdown. This session presents the subject of spill response including the shipyard spill response plan, spill reporting procedures, response actions, and scenario analysis.

The Spill Response Plan

The shipyard must prepare an oil spill response plan that will be followed in the event of an oil spill. The response plan must be submitted to the COTP. The PIC must understand the shipyards oil spill response plan and its associated procedures. The response plan must be written in English and divided into the sections and format below:

- 1. Introduction and plan contents**
- 2. Emergency response action plan:**
 - Notification procedures
 - Spill mitigation procedures
 - Response activities
 - Sensitive areas
 - Disposal plan
- 3. Training and drills:**
 - Training procedures
 - Drill procedures
- 4. Plan review and update procedures**
- 5. Appendices:**
 - Facility-specific information
 - List of contacts
 - Equipment lists and records
 - Communications plan
 - Site-specific safety and health plan
 - List of acronyms and definitions
 - A geographic-specific appendix for each zone in which a mobile facility operates.

Internal Notification Procedures For Spills, Leaks, Discharges and Other Incidents

The internal notification procedures initiate the on-site spill response procedures. The PIC must understand the process for reporting and responding to spills and other incidents during bulk oil and hazardous material transfer operations. If a spill or leak occurs during the transfer, some basic steps must be followed by the PIC to ensure proper response, reporting and clean-up. Always remember that employee safety comes first, and that if anyone is in danger, their needs must be attended to before responding to the spill. The following list identifies the basic steps in spill response:

1. Notify other PICs in the area of the spill verbally, with hand signs and/or radio.
2. Stop or slow the flow of the spill (i.e., emergency shutdown procedures).
3. Attempt to contain the spill with dikes, berms and/or absorbent materials.
4. Report the spill incident to the on-site incident spill emergency phone number.

Report the Following Information:

- a) Caller's name and badge number
- b) The extension from which the call is being made

- c) Brief description of the incident (i.e., spill, leak, potential situation)
- d) Location of incident (berth number, ship, deck, compartment, etc.)
- e) Other relevant information

Note: The caller should stay on the line until advised that notification is complete.

5. Assist responders at the scene to clean up the spill and direct the safety and fire personnel to injured employees.
6. Do not leave the scene of the spill until the spill is cleaned-up and your designated PIC supervisor has received all of the information and dismissed you.

Release/Discharge And External Notification Procedures

There are several State and Federal environmental laws that regulate water pollution and pollution prevention. The Federal Water Pollution Control Act of 1948 (Clean Water Act), Section 1321(B)(7), requires the PIC of a vessel or on-shore facility to report a *discharge* to the appropriate US Agencies (i.e., USCG), as soon as there is knowledge of the discharge. Failure to immediately make notification subjects the specified responsible PIC to criminal prosecution with a fine up to \$25,000 per day.

What Constitutes a Discharge or Release?

A discharge is any release of oil or a hazardous material to the environment (adjacent state waters) that causes a sheen to appear on the surface of the water. It takes a very small quantity of oil to cause a sheen and a very small amount of hazardous material to be reportable. The law states that this amount of hazardous material or oil has been determined to be a potentially harmful quantity to potentially damage the environment. The environmental department will help with the decision to report discharges.

What Constitutes a Spill?

A spill can be a temporary loss of control of a hazardous substance. If the spill is not released to the environment (adjacent state waters), then it is not reportable as a discharge. Spills must be reported internally and every effort must be made to ensure the spill does not discharge into the receiving waters.

External Notification

All oil spills that produce a visible sheen or reportable quantity in the U.S. navigable water will be reported to the National Response Center, U.S. Coast Guard, the Office of Emergency Services, and the Regional Water Quality Control Board. The shipyards designated responsible individual, or PIC, shall perform any and all required outside reporting and notification to regulatory agencies.

1) National Response Center

Phone Number 1-800-424-8802 (24 hours)

2) U.S. Coast Guard - Local

Phone -

3) Office of Emergency Services

Phone Number 1-800-852-7550 (24 hours)

4) Local Regional Water Quality Control Board

Phone Number -

USCG Inspections And Spill Investigations

When there is a reported spill, discharge, or other incident that involves an investigation by the USCG, all USCG inspectors should be accompanied by a specified and identified PIC or other responsible company personnel. It is important to always escort USCG personnel for their own safety, and to assist with investigations or answer questions concerning an inspection. It is a good idea to take notes and document everything that is said and performed during the investigation.

Spill Prevention and Containment Practices

Equipment Inspections: In order to ensure maximum reliability of system components, the equipment associated with the transfer (the piping system, hoses pumps, tanks, etc.), should be regularly inspected and tested. Frequent inspections, in combination with a preventative maintenance program is essential for pollution prevention.

Response Equipment: The on-site fire department or designated first responders will have on-scene oil spill response equipment and off-site spill response support. On-site equipment is owned and managed by the shipyard and PICs must be aware of proper deployment procedures for boom and for absorbent pads. It is a good practice for the on-site emergency responders to observe and inspect all transfer operations to ensure fire and environmental incident prevention.

Vessel Booming To Contain Potential Spills: No transfer operation should be conducted until a containment boom is in place around the ship or barge. The boom will provide immediate containment of any spill and allow spill response personnel time to deploy any additional booming material or absorbent material to contain and remove the oil from the water surface. The boom should be left in place until the oil transfer operation is completed (i.e. hoses are drained, disconnected, capped and placed safely in their storage/containment area). When there is no chance of any type of discharge, the boom will be removed from the vessel.

Drip and Leakage Collection Systems: Drip pans will be located at all valve connections and pump connections. The drip pans holding capacity will be a minimum of 10 gallons. All loading trucks and storage tank valves will have drip pans to catch any leakage from connecting or disconnecting hoses during loading or unloading operations. A secondary containment berm will be located completely around above ground storage tanks to prevent any release if malfunction occurs. Each hose connection manifold, used for 6 inch inside diameter piping, will have discharge containment capacity of two barrels.

Emergency Shutdown System: In an emergency, the PIC will shut down the power (air, mechanical or electrical) to the pump and isolate the hose by closing the gate or butterfly valves on the vessel and at the facility. This immediate shut down will be accomplished by direct electrical, pneumatic or mechanical linkage to the facility through an electronic voice communication system by the vessel or facility PIC. This shut down point will be located near the dock manifold connection to minimize the loss of oil in the event of a rupture or failure of the hose or manifold valve. All other truck gate valves and above ground storage valves will be closed after the pumping system power has been shut down.

Oil Transfer Fire Extinguishers: At each oil transfer location at least one class B, 20 lb. dry chemical extinguisher will be located for emergency purposes. The PIC will know the exact location of the fire extinguisher before the transfer operation begins. The PIC will have received training on

the proper operation of this type of fire extinguisher and understand all associated dangers. The following is a brief overview of extinguisher use:

- Always use the correct fire extinguisher for a fire incident.
- Understand the difference between the types of classes (Class "A" - wood, rags, paper; Class "B" - gas, paint, oil, etc.; Class "C" - electrical).
- Know the locations of the types of fire extinguisher in your area of responsibility.
- PICs must learn to use portable extinguishers properly. The shipyard emergency response coordinator should instruct PICs on the proper use of the different types of fire extinguishers. If a fire occurs in your area:
 - Report by phone or radio immediately,
 - Select the proper extinguisher,
 - Position yourself upwind with a clear exit out and a safe distance away from the flames and heat,
 - Pull the safety pin on the release handle,
 - Aim the discharge end of the extinguisher at the base of the fire,
 - Depress the release handle to activate the extinguisher,
 - Use a sweeping back and forth motion at the base of the fire, and
 - Always stay a safe distance from the fire and stay out of the fire area, after the fire is out.

Be alert of any reflash of the fire and always report the fire to the Fire Department no matter how small the fire.

On-Site Transfer Operation Spill Scenarios

Developing spill scenarios and analyzing how the PIC and transfer personnel will react is an excellent method for preparation of spill response. Spill scenarios allow for an immediate understanding of the most vital portions of the response plan. The following sections analyze some scenarios from tank overfill to explosions and fires.

Many of the procedures for various scenarios are the same. For example, every spill scenario requires the PIC to perform an emergency shutdown of the pumping operation and immediately report the incident to the internal reporting system. Also, the decision as to whether to resume or cancel the transfer operation will always be made jointly by the facility and vessel PICs and the Ship Manager, after containment of spill, clean-up of spill and determination of the cause of the overflow has been determined. Also, if the spill is discharged to the adjacent waters and the USCG is performing investigations and clean-up, transfer operations will commence with USCG approval.

Example Scenario - Tank Overfill

The scenario is the event of a spill incident, such as a tank overfill failure in either the vessel (barge) or the transfer facility (pier-side tank or truck).

The PIC will institute the following procedures:

- 1 Emergency shutdown of all transfer operations to stop the flow immediately.
- 2 Immediate notification of spill incident and provide information as to the incident, location and if any person was exposed to the cargo. This incident should be reported immediately if one of the following occurs:
 - There is a need for clean-up assistance from the on-site emergency response individuals,
 - There has been a discharge into the water; and/or
 - There is a potential injury or fire.

- 3 Once the system has been shut down, close the vessel manifold valve and facility transfer valves. This will help prevent fluids from the vessel or facility tanks to continue being released.
- 4 As the first person on the scene, immediate containment of the discharge should be accomplished (if possible). Containment within the deck catchment area on the vessel or within the berm area of the tank ashore may be suitable, although the containment system should be inspected for leaks and overall adequacy. If the secondary containment system appears to be inadequate, perform efforts to dam, dike or otherwise control the spill.
- 5 The PIC should direct the first responders to any exposed individuals and to the spill or leak site.
- 6 First Responder and the PIC personnel should evaluate if they will need to initiate outside emergency response resources and notify external agencies of a discharge into adjacent waters.
- 7 Once the spill is under control, spill incident documentation should take place. The PIC must work with the first responders to identify the cause of the spill and determine measures to prevent future occurrences. This documentation can occur on an internal incident log.

Student and Instructor Scenario Drills

PICs and their managers should go through a series of table top exercise scenarios to analyze the proper procedures. Scenario drills are an important learning process for PIC personnel. The drills should be hands on participation by groups in the class. It is helpful if there are small groups to evaluate each situation and identify all emergency response actions and their sequence. The following provides some basic emergency situations that may occur (italics identify some of the discussion points):

Hose/Piping System Rupture

During the transfer operation, a break is discovered in the vessels hose or at the facilities pipeline area. The leak is flowing, although the line has not completely severed in two. What are the PICs responsibilities and what will be the response actions?

If the break is in the vessel hose, disconnect it, hoist the outboard end into the air, crack the vessel's manifold valve and drain the hose back into the ship.

If the break is not in the hose, PIC personnel will inspect the pipeline to determine the location, size, and possible cause of the rupture and the required repair effort.

Storage Tank Failure

Storage tanks rarely fail. However, an incident may occur where a tank develops a small crack that could rupture catastrophically in a matter of minutes. The PIC must react quickly and respond effectively in order to prevent an entire tank discharge. What are the emergency response steps from the point that the tank leak is discovered?

Notify on-site emergency crews of tank failure, release contents, incident location, and if any person was injured or exposed to tank failure contents.

Begin transfer of tank contents to a separate portable tank (if possible) to reduce the release from the tank.

Explosion or Fire During the Transfer Operation

If the fire is located on the pier where your transfer process is located, as PIC of the operation, what are your responsibilities, priorities and response actions after you discover the fire?

All facility and vessel personnel will evacuate the fire area and direct fire fighters to the scene. Under no circumstance are PICs to fight a fire unless properly trained and extremely cautious.

Session 9.0 Post-Transfer Procedures

This session is focused on informing the student that the transfer process is not complete until certain measures are complete. The PIC and transfer personnel must understand that procedures are also in place for post-transfer operations. These include equipment disconnection and storage, area clean-up and proper waste control. Post-transfer procedures and practices are designed to ensure compliance with the operations manual and minimize the likelihood for spills and other related accidents.

After The Transfer

The entire transfer operation does not end when the pumps are shut down. Transfer personnel should not become complacent during post transfer operations because the risk for spills is still very high. There are several practices that must take place to complete the entire operation and ensure a safe and spill-free transfer. The following list identifies some basic functions that need to be completed during the post-transfer period:

- All transfer system valves must be closed once the transfer is complete.
- All hoses must be drained into a proper receptacle before final disconnection.
- All transfer hoses must be blanked off before movement out of the secondary containment area.
- Transfer header flanges and manifolds should be blanked off immediately after hose removal.
- Personnel should take a final sounding of all tanks to ensure ample space for expansion.

Always Use the Lock-Out / Tag-Out Procedures

Lock-out/tag-out procedures are very important for all pumping and piping systems. The procedures provide a method of controlling systems and ensuring that valves are not operated improperly or by the wrong people. Following the procedures will help prevent the likelihood of spills or other accidents. The PIC and transfer personnel should perform the following:

- Secure all above ground tanks using a lock-out/tag-out system in order to prevent unauthorized access to the tank.
- Ensure that all transfer personnel are trained in lock-out/tag-out procedures and practices.
- Ensure that shipboard tanks and systems are controlled using a lock-out/tag-out system in order to prevent unauthorized access and potential discharge.

Proper Containment, Piping, and Transfer Equipment Storage

The PIC and transfer personnel are responsible to ensure that all equipment associated with their process is properly maintained and stored. Problems can arise if equipment is not stored correctly.

- Store all hoses and equipment where they are protected from the weather. Prolonged exposure to the elements will lead to premature degradation of equipment and an increased likelihood for failure

- Ensure that the storage areas are secure. For example, store piping, pumps, valves, and manifolds in an area where they will not be tampered with, used for the wrong purpose, and/or damaged by production operations.

Area Clean-Up

No job is complete until all equipment is put away and the area is cleaned-up. Transfer personnel and PICs who leave the work area before the job is finished are leaving an area that still has the potential to cause accidents and/or spills. The PIC must perform and direct other transfer personnel to perform the following:

- Ensure that all electrical power is disconnected and that all compressed air connections are removed before the PIC completes the clean-up and leaves the transfer area.
- Once the area is cleaned up and the transfer process is complete, all associated equipment will be put away and cleaned.
- Ensure that the work area is properly cleaned-up by removing, cleaning, and properly storing all pumps, hoses, and related equipment.
- Clean up any spilled material inside and outside of containment areas with absorbent materials or other spill clean-up means.
- Until the final clean-up and proper storage of all associated equipment, a harbor broom should be in place and/or readily available if there is a chance for tank leakage or spills.

Proper Waste Accumulation and Control

The transfer process can create wastes such as oil, spill clean-up materials, rags and other potentially hazardous wastes. This waste material must be accumulated and managed properly. The PIC and transfer personnel should use the following as a guide:

- All oily waste rags should be properly accumulated in a covered 55 gallon drum that is labeled properly as hazardous waste.
- Ensure that the waste accumulation drums are properly packaged and secured for transportation.
- All hazardous waste and/or material drums (rags, sludge, oils, solvent, fuel, etc.) must be labeled in accordance with local, state, and federal regulations.
- Waste accumulation drums should remain in a secondary containment area until the waste is transported to the central accumulation area.
- A waste transportation form should be filled out and used when the waste is ready to be transported to the central waste accumulation area.
- PIC should have enhanced guidance and training on hazardous waste control in the shipyard.

**Session 10.0 PIC Training Summary, Continuous Improvement
and On-The-Job Training (OJT) Training Modules**

This session summarizes the PIC Training Program and establishes an understanding about continuous improvement and On-The-Job Training (OJT) modules. The driving force behind this training program is the US Coast Guard pollution prevention regulations, employee safety and the need for consistent transfer procedures. Proper transfer practices are the key to successful transfer operators, and continually improving operations will increase overall efficiency and decrease the potential for spills.

Minimizing Potential For Spills

In the shipyard, all transfer personnel are responsible for safe and effective transfer operations, which includes pollution prevention. It is very important to understand that transfer of hazardous materials to and from ships and barges is a potentially risky process due to the close proximity to state waters and the quantity of liquids being transferred.

Transfer failures are frequently caused by:

- Human Effort (Improper procedures, the lack of procedure adherence, etc.)
- Poor Communication (not understanding roles and responsibilities)
- Equipment Failure (connections, couplings, pumps, tanks, etc.)
- Personnel Fatigue (lack of sleep, too many work hours, etc.)

Several other factors can cause problems that may result in significant releases of hazardous substances to the environment. The best way to eliminate errors during the transfer process is to implement Pollution Prevention Practices, which include:

- Secondary Containment (transfer areas, material storage areas, pipe couplings, etc.)
- Oil Containment Booms (before, during and after the transfer process)
- Frequent Inspections (before, during and after the transfer process)
- Well Defined Transfer Practices and Procedures
- Emergency Shutdown and Response Procedures
- Warning Signs (no smoking, transfer warning signs, emergency phone signs)

Organization and Procedures Are The Key To Pollution Prevention

The purpose of this training program is to emphasize that utilizing proper procedures, practices and using an organized approach including checklists and inspections will lead to pollution prevention. A very good approach is outlined in this training program, which includes the use of the following:

- Pre-Transfer Plan,
- Pre-Transfer Conference, and
- Start-Up Criteria and the Declaration of Inspection (DOI).

PIC Training Objectives

This training program should provide the basic understanding of what is required of a PIC and how the transfer personnel should work together to prevent pollution. The following subjects were presented and all PIC trained personnel should understand:

- The principals surrounding pollution prevention pathway analysis and risk analysis.

- How to perform transfer operation functions in a safe and effective manner within the guidelines of the Operations Manual and associated procedures.
- Individual responsibilities of transfer personnel to ensure transfer operations are safe and free of accidents. Transfer personnel can include:
 - **Point of Transfer Watch**
 - **Deck Rover Watch**
 - **Tank Fill Monitor**
- How to perform inspections and evaluation of operations and equipment associated with the transfer process. Proper completion of the Declaration of Inspection (DOI) is an important function.
- How to respond quickly and accurately to emergencies during transfer operations using site spill emergency procedures. This will include decision making during abnormal conditions.
- Implementation of “emergency spill prevention”, which are measures needed to avert a spill during or following an abnormal event such as a storm, fire, injury, or equipment malfunction.

Continuous Improvement

Continuous improvement is an important concept that everyone must understand and apply in the shipyard. There should be an open forum to improve current practices and procedures. Improvements to the transfer operation should be focused on the following:

- ◊ Streamlining procedures for increased organization and process control.
- ◊ Making facility improvements that help prevent pollution or simplify the process.
- ◊ Training and drill processes aimed at reacting to abnormal conditions.
- ◊ Developing a method of feedback to integrate and utilize improvement ideas.
- ◊ Providing for frequent Operations Manual updates and improvements.

Minimum PIC Training Criteria

The shipyard must train individuals to perform transfer operations in the shipyard. Each PIC must have the following minimum training and experience:

- ⇒ 48 Hours of Experience Performing Transfers
- ⇒ A Complete Understanding of The Operations Manual
- ⇒ Satisfactory Completion of The PIC Training Course
- ⇒ Pass All Associated Tests and All OJT Assignments

On-The-Job Training (OJT) Modules

Continuous On-The-Job Training and operational improvements will help solidify the learning experience. OJT modules are developed for several of the sessions in this training program. The modules are set-up with several tasks that require the student to observe transfer operations. The student is also asked to comment on the procedures and processes. The students' supervisor must discuss and sign-off on each of the training modules. The OJT modules are an excellent method for enhancing the training materials discussed in class. The following OJT modules have been developed to work in conjunction with this training course:

Session 2.0 - OJT - Pollution Prevention Training For PICs

Session 5.0 - OJT - Required Equipment For Transfer Operations

Session 6.0 - OJT - Safety Concerns For PICs

Session 7.0 - OJT - Transfer Operation And Procedures

Session 9.0 - OJT - Post-Transfer Procedures

The PIC training will be complete once the student has completed the in-class training, completed all of the OJT modules and completed the final exam with a minimum of 70% for passing.

Comprehensive Examination

A comprehensive exam will be given to help ensure that students understand the materials presented in class. The exam focuses on information that is vital to Pollution Prevention and understanding the role of the Operations Manual, the Declaration of Inspection, and other shipyard procedures. The following are basic instructions for the test:

1. There are a total of 50 multiple choice questions.
2. Approximately 20 minutes will be available to complete the test.
3. Read questions and answers all the way through before you mark your answer.
4. Circle all answers that you think are correct.
5. The test will be graded in class and a 70% is required for passing. The instructor will award 1/2 points to partially correct answers.
6. The test will be corrected and discussed in class.

Instructions for Test

- 1. You have approximately 30 minutes to complete the test**
 - 2. Read questions and all the answers before you mark your answer**
 - 3. Circle all answers that you think are correct**
 - 4. The test will be graded in-class and a 70% is required for passing. 1/2 points will be awarded to partially correct answers.**
-

- 1. The transfer of oil and hazardous material is regulated by which U.S. agency?**
 - a. U.S. Coast Guard
 - b. U.S. Navy
 - c. U.S. EPA
 - d. U.S. Department of Commerce
- 2. The person who is in charge of a transfer operation for a facility or vessel is called a:**
 - a. Shipper
 - b. Transporter
 - c. Person In Charge
 - d. Designated Person
- 3. Before starting each transfer operation, the following document must be completed by the PIC:**
 - a. Declaration of Inspection
 - b. Operations Manual
 - c. Letter of Adequacy
 - d. Letter of Intent
- 4. What does the Spill Response Plan address?**
 - a. Notification Procedures
 - b. Response Actions
 - c. Drill Procedures
 - d. Weather Forecasting
 - e. Tidal Surges and Surf Conditions
- 5. What makes an area Risky for pollution prevention?**
 - a. High Volumes
 - b. High Toxicity
 - c. Close Proximity to Water
 - d. Ready and Close Pollution Pathways
 - e. All of the Above
- 6. Where should transfer personnel use secondary containment?**
 - a. In the Transfer Area
 - b. Hazardous Materials Storage Areas
 - c. Around Tanks
 - d. Under Connections
 - e. All of the Above
- 7. The Shipyard Operations Manual should have all but the following:**
 - a. Procedure for Transfer
 - b. Spill Reporting Procedures
 - c. Equipment Failure Accounts
 - d. Pollution Prevention Practices
- 8. What is not a major cause of spills?**
 - a. Human Error
 - b. Poor Communication
 - c. Ungrounded Tanks
 - d. Personnel Fatigue
 - e. Equipment Failure
- 9. When shall booms be in-place?**
 - a. During the Transfer Process
 - b. Before the Transfer Process
 - c. After the Transfer Process
 - d. a and b
 - e. a, b, and c
- 10. The PIC must, at a minimum, have:**
 - a. 48 Hours of Experience Transferring
 - b. Complete Understanding of the Operations Manual
 - c. Completed the PIC Training Course
 - d. Fire-Fighting Training and Advanced Emergency Response
 - e. a, b, and c

11. Who is responsible for the facility transfer process and personnel?

- a. The Vessel PIC
- b. The Point-Of-Transfer Watch
- c. The Area Manager
- d. The Facility PIC

12. What is the most important aspect of the PIC training?

- a. Completing The Transfer Process Fast and Efficient
- b. Ensuring Compliance With Coast Guard Regulations
- c. Developing Effective Emergency Response
- d. Pollution Prevention During Transfer Operations

13. What is the main shipyard document that governs the transfer operations?

- a. The Pre-Transfer Plan
- b. The Spill Prevention Plan
- c. The Best Management Practices Plan
- d. The Operations Manual

14. What do environmental laws and regulations protect?

- a. Air Quality
- b. Water Quality
- c. Land Quality
- d. The Public
- e. All Of The Above

15. Who can be fined or imprisoned for violation of environmental laws?

- a. Corporate Management
- b. PICs
- c. Supervisors
- d. Watch Personnel
- e. All Of The Above

16. What elements make up pollution prevention practices?

- a. Common Sense
- b. Logical Procedures
- c. Low Technology
- d. Facilities and Equipment
- e. All Of The Above

17. Pollution pathways include the following, except:

- a. Drainage Ditches
- b. Storm Drains
- c. Scuppers and Drain Pipes
- d. Free Ports an Deck Drains
- e. Containment Areas

18. What types of notification are required by the transfer personnel?

- a. Internal Notification
- b. External Notification
- c. EPA Notification
- d. DOT Notification
- e. OES Notification

19. Is there always a reportable release when there is a Spill?

- a. Yes
- b. No

20. If a spill occurs, what should be your first reaction?

- a. Perform Internal Spill Reporting
- b. Perform Emergency Clean-up Response
- c. Communicate Emergency Shutdown
- d. Call the EPA

21. What pollution prevention efforts are performed by the transfer personnel?

- a. Installation of Vessel Booms
- b. Leak and Connection Containment
- c. Drinking Caffeinated Soda
- d. Ensuring Continuous Communication

22. Are tabletop spill scenarios and drills good learning experiences?

- a. Yes
- b. No

23. When is the transfer operation complete?

- a. As Soon As The Pumps Are Shut Down
- b. When The PIC Says So
- c. When The Boom Is Removed
- d. When All Post Transfer Operations Are Complete
- e. All Of The Above

24. Whose responsibility is it to prevent the potential for spills?

- a. The PIC For The Vessel And The Facility
- b. It Is Mainly The Responsibility of the Spill Watch Personnel
- c. Nobody Is Totally Responsible
- d. All Transfer Personnel Are Responsible
- e. All Of The Above

25. What is Not the responsibility of the PIC?

- a. Ensure Continuous Two-Way Communication
- b. Manage Their Transfer Personnel
- c. Ensure That Transfer Personnel Do Not Work Overtime
- d. Ensure that the DOI is Complete And Accurate

26. The transfer personnel can include the following, except:

- a. Point-Of-Transfer Watch
- b. Deck-Rover Watch
- c. Tank-Overfill Watch
- d. Watch-Dog Watch

27. A well executed transfer process will include the following, except:

- a. Pre-Transfer Plan
- b. Pre-Transfer Conference
- c. Pre-Transfer Transfer
- d. Start-Up Criteria And A DOI

28. All hose connections shall be the following, except:

- a. Over The Water
- b. Over A Containment Area
- c. Fixed Connection
- d. Leak-Free

29. Whose Responsibility is it to identify the correct transfer process procedures?

- a. Vessel PIC
- b. Facility PIC
- c. Everybody
- d. Watch Personnel
- e. a and b

30. When should the transfer process and equipment be inspected?

- a. Before The Transfer
- b. After The Transfer
- c. During The Transfer
- d. All Of The Above

31. What should the transfer personnel inspect for?

- a. Leaks
- b. Potential Pollution Pathways
- c. Potential Equipment Problems
- d. Proper Procedures
- e. All Of The Above

32. Is vessel stability important to the PIC ?

- a. Yes
- b. No
- c. Sometimes

33. What document triggers the transfer process to begin?

- a. Letter Of Intent
- b. Letter Of Authorization
- c. Start-Up Plan
- d. Declaration Of Inspection (DOI)

34. A PIC may serve both a transferring vessel and a receiving vessel at the same time.

- a. True
- b. False

35. Can spills and discharges be prevented by the PIC and transfer personnel?

- a. Sometimes
- b. Always
- c. Most Of The Time
- d. Never

36. What should a PIC trained person Not know about hazardous materials?

- a. Proper Storage
- b. Fire Hazards
- c. Ignition Sources
- d. Incineration Techniques

37. What types of ignition sources could be in the transfer area?

- a. Internal Combustion Engines
- b. Spark Arrestors
- c. Open Flame Lights
- d. Electrical Wiring
- e. All Of The Above

38. What sign should Not necessarily be in place during the transfer?

- a. No Dumping
- b. No Smoking
- c. Fire Extinguisher Signs
- d. Emergency Phone Signs
- e. Transfer Warning Signs

39. Should all transfer personnel be trained to use fire extinguishers?

- a. Yes
- b. No

40. Safety and performance can be increased with?

- a. Organization
- b. Longer Breaks
- c. Higher Volume Pumps
- d. Bonuses

41. Do most transfers in the shipyard require more than a Facility PIC and a Vessel PIC?

- a. Yes
- b. No

42. Of the following records, which is Not kept for transfer purposes?

- a. Declaration of Inspection
- b. Hose Test Results
- c. Names Of All Current PICs
- d. Spill Contaminant Levels

43. Who should understand emergency shutdown procedures?

- a. The Pump Operator
- b. The PICs
- c. All Transfer Operation Personnel
- d. All Shipyard Employees
- e. The Security Guards

44. How much containment is required for a 6 hose connection?

- a. Two Barrels
- b. Three Barrels
- c. Four Barrels
- d. Not less than 5 gallons

45. What is true about containment areas?

- a. Shall be kept clear and clean
- b. Rainwater should be removed
- c. Free of leaks and cracks
- d. Of Sufficient Size For Containment
- e. All Of The Above

46. When should lighting be used?

- a. From Sunrise to Sunset
- b. By Midnight
- c. When Needed
- d. Between Sunset and Sunrise

47. Should transfer equipment be on a preventive maintenance program?

- a. Yes
- b. No

48. Do all hoses need to meet specific requirements?

- a. Yes
- b. No

49. Each transfer hose must be marked with the following information:

- a. Designed Burst Pressure and Date of Testing
- b. Date of Manufacture
- c. Date of Purchase
- d. Marked for "Oil Service" and Maximum Allowable Working Pressure

50. In an emergency, the person in charge will shut down the pumping operation within:

- a. 45 Seconds
- b. 30 Seconds
- c. 60 Seconds
- d. 10 Seconds

Additional copies of this report can be obtained from the
National Shipbuilding Research and Documentation Center:

<http://www.nsnet.com/docctr/>

Documentation Center
The University of Michigan
Transportation Research Institute
Marine Systems Division
2901 Baxter Road
Ann Arbor, MI 48109-2150

Phone: 734-763-2465
Fax: 734-763-4862
E-mail: Doc.Center@umich.edu